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REPORTS of the INDIAN TRADE ENQUIRY

- HIDES AND SKINS
- RICE
- OIL-SEEDS
- RESINS
- JUTE AND SILK
- TIMBERS AND PAPER MATERIALS
- DRUGS AND TANNING MATERIALS

ETC ETC

IMPERIAL INSTITUTE

INDIAN TRADE ENQUIRY

REPORTS ON HIDES AND SKINS

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IMPERIAL INSTITUTE

Committee for India

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The Chairman of the Executive Council of the Imperial Institute (The Right Hon LORD ISLINGTON, G.C.M.G , D S O.) and the Director (Professor WYNDHAM R. DUNSTAN, C M G , F.R.S.) are ex-officio members of the Committee for India.

Committee on Indian Hides

(February 1916)

Professor WYNDHAM R. DUNSTAN, C.M G., F.R.S. (*Chairman*).
Sir W. EARNSHAW COOPER, C.I.E.
H. P. DENSHAM, Esq.
W. L. INGLE, Esq.
Sir HENRY LEDGARD.
C. J. LONGCROFT, Esq.
E. PENTON, Esq. (now Sir E. PENTON, K.B.E.).
HAROLD BROWN, Esq. (*Secretary*).

This Committee, with additional members (see below) was subsequently requested in August 1916 by the Committee for India to act as a Special Committee on Hides and Tanning Materials in connection with the Indian Trade Enquiry.

INDIAN TRADE ENQUIRY

Special Committee on Hides and Tanning Materials

(August 1916)

Professor WYNDHAM R. DUNSTAN, C.M G , F R.S (*Chairman*).
Sir W EARNSHAW COOPER, C I E.
H. P. DENSHAM, Esq.
W L INGLE, Esq.
Sir HENRY LEDGARD (resigned October 1918)
C. J. LONGCROFT, Esq
E. PENTON, Esq. (now Sir E. PENTON, K.B E —resigned October 1917).
A. YUSUF ALI, Esq , C B.E. (resigned November 1918)
Sir CECIL GRAHAM (co-opted July 1917)
Sir HARVEY ADAMSON, K.C.S I (co-opted July 1918)
Lieut.-Col. S H GODFREY, C.I.E. (co-opted July 1918)
SAMUEL MILLAR, Esq. (co-opted October 1918)
C W. DAWSON, Esq. (co-opted November 1918).
HAROLD BROWN, Esq. (*Secretary*).

PREFATORY NOTE

In August 1916 the Secretary of State for India invited the Imperial Institute Committee for India to conduct an enquiry into the possibilities of further commercial usage in the United Kingdom of the principal Indian raw materials. It was also proposed that the enquiry should include the possibility of the usage of these materials in other parts of the Empire.

The invitation was accepted by the Committee for India, and a number of Special Committees were formed to deal with the principal groups of materials selected for inclusion in the Indian Trade Enquiry.

The groundwork for the consideration of the various Committees has been supplied from the information as to the raw materials concerned which has been systematically collected at the Imperial Institute, chiefly in the Scientific and Technical Department and in the Technical Information Bureau.

The Committees have also had at their disposal the numerous reports made by the Scientific and Technical Department of the Institute during recent years on the composition and commercial uses and value of Indian raw materials, and have also utilised the collections of raw materials of India derived partly from Technical Departments in India and partly from commercial sources which are included in the Indian Section of the Public Galleries and in the Reference Sample Rooms of the Institute.

It has now been decided by the Secretary of State that, subject to certain reservations, the reports of these various Committees which have been forwarded by the India Office to the Government of India shall be published.

The reservations referred to are that at the request of the Government of India paragraphs in certain of the

reports as presented should be omitted, such paragrapl being indicated by asterisks, and that it should be state that the reports represent the personal opinions of tl members of the Committees, and that the Secretary (State is in no way committed to accept these opinions.

C. C. McLeod,
Chairman, Committee for Indic

November 1919

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I

THE TRADE IN RAW INDIAN COWHIDES

The raw cowhides (kips) exported from India, which are normally of the value of about £4,000,000 annually, were principally taken in recent years by Germany and Austria, and the loss of these markets on the outbreak of the war had an immediate and serious effect on the Indian export trade in these hides. It was difficult to find at once other outlets for the large quantities of raw kips hitherto exported to enemy countries, and the Imperial Institute was approached by Government Departments in India for assistance in this direction.

At one time the tanning of Indian kips was an important industry in the United Kingdom, but subsequently the trade became almost wholly German, and for several years previous to the war British tanners had almost abandoned the use of Indian kips. Preliminary enquiries showed that there were difficulties in the way of reviving the tanning of Indian kips in this country, and, with the concurrence of the India Office, the Imperial Institute undertook to investigate the entire subject of the trade in these hides. A small Committee, including representatives of firms interested in the subject, was constituted in February 1916 for this purpose, the present members being as follows :

Professor Wyndham R. Dunstan, C.M.G., F.R.S., Director of the Imperial Institute (*Chairman*).

Sir W. Earnshaw Cooper, C.I.E., of Messrs. Cooper, Allen & Co., Ltd., Cawnpore.

Mr. H. P. Densham, Chairman of the United Tanners' Federations of Great Britain and Ireland.

Mr. W. L. Ingle, Member of the Executive Committee of

the United Tanners' Federations of Great Britain and Ireland.

Sir HENRY LEDGARD, late President of the Upper India Chamber of Commerce.

Mr. C. J. LONGCROFT, of Messrs. David Sassoon & Co., Ltd.

Mr. E. PENTON, of the War Office Contracts Department.

Mr. H. BROWN, Imperial Institute (*Secretary*).

The Committee have held twenty meetings, besides other Conferences, at which the entire subject of the trade in raw Indian kips has been carefully considered. The Committee now desire to submit a full report in continuation of their Memorandum of June 22nd, 1916, and their Interim Report of January 26th, 1917. The report is arranged under the following heads:

I. Position of the trade in raw Indian kips.

II. Investigations of the Committee respecting:

(A) The transference of the Indian export trade in raw kips from German and Austrian to British firms.

(B) The re-establishment of the tanning of Indian kips in the United Kingdom.

III. Conclusions.

I. POSITION OF THE TRADE IN RAW INDIAN KIPS

It is desirable in the first instance to review briefly the position of the trade in raw Indian kips, which has been already explained in the Committee's Memorandum of June 22nd, 1916.

The tanned kips exported from India, principally from Madras and Bombay, are not considered in this Report, as practically the whole of the exports are taken by the United Kingdom, and consequently no difficulty arises as to their disposal, and no difficulty is likely to arise in absorbing in the future increased quantities of Indian tanned kips.

The total quantities and values of the raw kips exported from India during the two years previous to the war (1912–13 and 1913–14), together with the proportions taken by the United Kingdom, Germany and Austria-Hungary, are shown in the following table:

Exports of Raw Kips from India

	1912–13 Quantity.		Value.		1913–14. Quantity		Value.	
	Cwt	Per cent.	£	Per cent	Cwt.	Per cent	£	Per cent.
Total exports of raw kips from India	831,200	—	3,969,754	—	743,037	—	3,937,007	—
To United Kingdom	35,076	4·2	137,051	3·4	14,919	2·0	62,819	1·6
To Germany	365,874	44 0	1,692,676	42·6	356,195	47·9	1,903,126	48·3
To Austria-Hungary	113,620	13·7	542,634	13 7	141,537	19·0	763,430	19·4

Germany and Austria took therefore 57·7 per cent. by weight (or 56·3 per cent. by value) of the total raw kips exported from India in 1912–13, and no less than 66·9 per cent. by weight (or 67·7 per cent. by value) in 1913–14. The other principal buyers were Italy, Spain and the United States. During the two years in question the proportion of raw Indian kips taken by the United Kingdom only amounted to 4·2 and 2·0 per cent. by weight (or 3·4 and 1·6 per cent. by value) of the total exports.

The outbreak of war, and the consequent closing of the German and Austrian markets, caused a considerable reduction in the exports of raw kips from India, the total quantity exported during 1914–15 being 480,513 cwt., or about two-thirds of the previous year's total; during 1915–16, however, the exports of raw kips increased to 691,970 cwt., which is only about 7 per cent. below the figures for 1913–14. The returns for the first nine months of the present fiscal year (1916–17) are 425,653 cwt., compared with 485,928 cwt. and 333,369 cwt. in the corresponding periods of 1915–16 and 1914–15.

The following table shows the principal destinations of the total raw kips exported from India in 1914–15, four months of which year were previous to the war:

	1914–15 Cwt.
Total exports of raw kips from India	480,513
To United Kingdom	77,923
,, Germany	137,655
,, Austria	38,865
,, Spain	41,890
,, Italy	66,211
,, United States	73,884

The detailed official statistics showing the destination of the total raw kips exported from India in 1915–16 ar not available, but the returns of the shipments fron Calcutta indicate that during both 1915 and 1916 th greater part of the exports went to Italy and the Unite States. In 1915 Italy imported over 3,500,000 raw kip from Calcutta alone, which is almost the same numbe as that taken by Germany before the war.

Large quantities of raw Indian kips were formerly take by British tanners, and it is stated that for some year prior to 1889 no less than 3,500,000 Indian kips wer tanned annually in the Leeds district alone. During th last three decades, however, the exports to the Unite Kingdom have diminished very considerably, and at th outbreak of war were very small as compared with th quantities taken by Germany and other foreign countries The exports of raw kips from India have only been show separately in the Indian Trade Returns since 1912–13, sc that it is not possible to give the exact quantities take by the United Kingdom previous to that year. Th decline which has occurred is, however, illustrated by th exports of raw kips from Calcutta (the principal port o shipment) to the United Kingdom, as shown in the following table :

Raw Kips shipped to the United Kingdom from Calcutta

Year	*Number*
1887	3,882,443
1888	3,522,956
1889	3,915,367
1890	2,694,554
1891	2,444,148
1892	1,038,417
1893	1,437,317
1894	1,591,011
1895	1,424,719
1896	681,164
1900	433,636
1905	174,888
1910	98,772
1911	135,134
1912	39,583
1913	17,530

These figures show that for several years prior to the war the use of Indian kips by British tanners had been almost entirely discontinued.

It is evident from the preceding statement that before the war the raw Indian kips were chiefly utilised by Germany and Austria, and the export trade in Calcutta was almost completely in the hands of German or quasi-German firms. Some of these firms were entirely German in composition, and all of them had important German connections. These firms, moreover, formed a strong "ring," and, on account of their extensive and well-planned buying organisations in India, and their control of the foreign markets, they had established complete command of the Calcutta trade in raw kips and were able to prevent other firms from entering the trade in competition. These firms had a considerable influence in assisting Germany and Austria to dominate, and eventually to monopolise, the Indian export trade in raw kips.

II. Investigations of the Committee

The Committee, having carefully considered the facts set out in the previous pages, are clear that these Indian kips represent an Imperial asset of very considerable value, and that arrangements should be made which will ensure that the kips are converted into leather within the Empire, thereby making an important contribution to Imperial industry and trade, instead of being exported through "German" firms in India in a raw state for manufacture in foreign countries. It is submitted that Imperial interests demand that the trade in Indian kips and their conversion into leather should be in future securely placed in the hands of British firms. There is no doubt that in the past these Indian kips have been of the utmost military value to Germany and Austria, where they were largely utilised for making the uppers of army boots.

These views were put forward in the Memorandum dated June 22nd, 1916, which formed the subject of the Conference with the Committee which was held at the India Office on July 3rd, 1916, under the chairmanship of Lord Islington. It was then arranged that the Committee

should proceed to investigate (1) whether British firn in India would be prepared to enter the raw hide trade and (2) whether tanners in the United Kingdom woul pledge themselves to take up the tanning of Indian kij on the large scale required.

The results of the Committee's enquiries on these tw points have been entirely satisfactory, and there is n doubt that, subject to certain conditions, arrangement can be made for the export of the kips to be conducte by British firms, free from any German or Austrian cor nections, and for the whole of the exportable surplus t be tanned within the Empire. These general conclusion were stated in the Committee's Interim Report date January 26th, 1917, and it is now possible to submit detail of the proposals of the British firms in India who are pre pared to enter the raw hide trade and of the British tanners

A. The transference of the Indian export trade ir raw kips from German and Austrian to British firms.

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The Committee have consulted several British firms trading in India likely to be interested in the export trade, and a meeting of representatives of these firms was held

on October 13th, 1916, to discuss the whole question. The meeting was of opinion that in view of the Imperial importance of the trade in raw Indian kips, only British firms free from German or Austrian connections should be allowed to participate in the business. It was suggested that this end would be attained if the Government of India were to give notice that after a certain limited period only firms holding Government licences will be allowed to trade in raw Indian hides, and that licences should only be granted on terms such as the following:

(*a*) That the capital of the licensed company, firm or individual shall be entirely British.

(*b*) That all partners, directors, or managers of such licensed company or firm shall be British, without previous German connections.

(*c*) That no British subject being under direct or indirect control, financial or otherwise, of foreign interests shall be allowed to have any share of the capital, or be a partner, director or manager of such licensed company or firm.

(*d*) That each licensed company or firm shall make a statutory declaration that neither the principal, partners, directors nor managers receive, or will receive, financial or material assistance in respect of this trade from any foreign firm or interest, and that the company or firm has not entered, and will not enter, into any financial or other arrangement by which any part of the trade in Indian raw hides might be transferred to the direct or indirect control of any foreign firm or interest.

(*e*) That the licences shall be renewed annually, and the renewal shall not be withheld unless the above conditions have been violated, or the company, firm or individual has abused the holding of the licence by keeping back supplies or by artificially inflating prices.

(*f*) That no licence to trade in Indian raw hides shall be granted to a company, firm or individual who before the war carried on, or was engaged in, business for the benefit of foreign countries taking part in the war against the Allies.

The meeting then resolved that the following firms represented are prepared to enter the Indian raw hide trade provided that the Government of India will adopt

the conditions agreed upon (see clauses (*a*), (*b*), (*c*), (*d*), (*e*
and (*f*) above):

Messrs. Allen Brothers & Co., Ltd.
„ Bird & Co.
„ Cooper, Allen & Co., Ltd.
„ H. T. Pearson & Co.
„ D. Sassoon & Co., Ltd.
„ E. D. Sassoon & Co.

The representatives of other firms who were present a the meeting agreed to recommend their respective firm to consider favourably the question of entering the Indiai raw hide trade on the conditions set out above.

The firms mentioned above are already getting togethe their organisations for entering the raw hide trade, anc four—Messrs. Allen Brothers & Co., Ltd.; Messrs. Birc & Co.; Messrs. Cooper, Allen & Co., Ltd.; and Messrs. D Sassoon & Co., Ltd.—are already shipping Indian hide: to this country. All these firms have informed the Com mittee that their action is based on the assumption tha the Government of India will be prepared to agree to th conditions suggested, and that should this expectation no be realised they will be compelled to discontinue.

There is no doubt that a number of British firms, in cluding of course Indian firms, in India other than thos consulted by the Committee will be willing to enter th raw hide trade if action is taken to exclude the firm: with any German connections.

The Committee are convinced that under the condition: proposed there will be no difficulty in getting British firm: to take up the export trade and to deal with the whol of the hides available for export.

It must also be pointed out that the promise of British tanners to take up the tanning of Indian kips is contingent on the complete removal from the trade of firms with German connections of any description.

B. The re-establishment of the tanning of Indian kips in the United Kingdom.

It has been pointed out already that at one time large quantities of Indian kips were tanned annually in England, but that subsequently the trade passed almost entirely to

German control. The principal factor which led to the transfer of the tanning of these kips to Germany was the imposition by the latter country of an import duty on leather, raw hides being admitted free. There appears, however, to be no reason why the industry should not be revived in this country provided that suitable guarantees can be afforded to British tanners that Germany and Austria will be prevented in future from obtaining a monopoly of the raw Indian kips.

The total number of Indian kips taken annually by Germany and Austria was about 5,000,000, and in considering the possibility of tanning these kips within the Empire the Committee came to the conclusion that if arrangements could be made by tanners in the United Kingdom to absorb by degrees 4,000,000 annually, the remaining million could be dealt with in the Dominions, notably in Canada. The Committee have made preliminary enquiries as to a possible market for raw Indian kips in Canada, and are informed that there is a very good prospect of disposing of large quantities of the hides to tanners in that country. The Committee are dealing further with this question, and also with the possibilities in other Dominions.

The Committee have carefully considered the problem of reviving the tanning of Indian kips in the United Kingdom, and have consulted, through the United Tanners' Federations, the principal tanners in this country as to the feasibility of the project. Several meetings of representative tanners have been held to discuss the question, and it was evident that it would be possible to arrange for the tanning of very large numbers of Indian kips in this country after the war, provided that Government will afford financial assistance for development, and that measures will be adopted to prevent Germany and Austria from again monopolising the trade. The Committee therefore requested the tanners to formulate the conditions upon which, in their opinion, the industry could be revived, and to consider the possibility of dealing with a number of kips, increasing annually, and reaching 4,000,000 in the third year after the war. These questions have been considered by a special Committee appointed

by the tanners, which has reported that the followi conditions are necessary:

(*a*) The imposition of an export duty on raw Indi kips, which duty shall be remitted if the kips are tann within the Empire.

(*b*) The restriction of the export of raw Indian hides British firms free from any German or Austrian connection

(*c*) The granting of financial assistance to tanners the United Kingdom in order to develop the industry as to deal ultimately with 4,000,000 kips annually. It suggested that in view of the importance of the indust to this country His Majesty's Government might be willi to grant assistance in the form of redeemable debenture or otherwise, to approved firms or companies who are pr pared to deal with substantial quantities of kips annuall

The tanners also suggest that only leather produce within the Empire should be employed for making t uppers of all boots supplied under Government and Mun cipal contracts. This would ensure a considerable mark for the leather made from Indian kips. It is also suggeste that the Government should grant every encourageme for the sale of the finished leather and other articles abroa especially within the Empire and amongst our Allies, an the Committee consider it important that this point shoul be borne in mind in international negotiations after the wa

If the above conditions can be satisfied, the tanners a confident that arrangements can be made to increase th tanning capacity of the country to a sufficient extent t enable them to deal with increasing quantities of ki annually, reaching 4,000,000 kips in the third year aft the war, and they are prepared to put forward a definit scheme for the purpose. It is not anticipated that the will be any difficulty in utilising after the war all classes o Indian kips, including both rejections and double rejection

The essential point in the proposals of the tanners i the imposition of a duty on the export of raw kips wit a remission in favour of tanners throughout the Empir The adoption of this policy would enable British tanne to secure supplies of raw material from within the Empir on more favourable terms than their competitors in forei countries, and, in addition to fostering the tanning in

dustry, would be of great assistance to them in disposing of the surplus of their finished products in foreign markets. Unless some permanent preference of this kind can be given to British tanners, which will prevent Germany and Austria from again monopolising the supply of raw Indian kips, it is certain that English tanners will not be disposed to incur heavy liabilities in order further to develop the industry in this country.

The tanners also lay great stress on the removal from the Indian export trade in raw hides of all firms with German and Austrian connections, and have intimated to the Committee, through the United Tanners' Federations, that unless this is done they will be compelled to reconsider the scheme for tanning the kips in this country.

In connection with the conditions formulated by the tanners the Committee desire to make the following observations :

With the imposition of an export duty a foreign country would be placed in a disadvantageous position in purchasing Indian kips. It may be contended that the effect of this would be to restrict the market, and that such restriction would not be beneficial to the Indian producer, as it might lead to a fall in price. The Committee are, however, satisfied that there is no excess of hides in any of the world's markets, and that for many years before the war the price of hides had steadily increased. In these circumstances there can be little doubt that raw Indian kips will always be in good demand, and will realise their value in relation to world's prices. The actual change of position for Indian producers would be only that instead of their produce being purchased from them almost exclusively by German and Austrian firms, the raw kips would be bought exclusively by British firms, competition among whom would be at least as keen and as likely to secure a fair price to the Indian producer as it did formerly in the case of a strong combination of enemy firms. So far as this country is concerned, the British tanner would be in a position materially to increase the British production of leather, whilst the British manufacturers of boots and other leather goods would purchase more British-tanned leather in place of foreign-tanned imported leather.

The Committee wish to make it clear that in putting forward these suggestions for an extension of tannage in this country they have kept in view the question of a further extension of tannage in India. This matter was referred to in the Committee's Memorandum of June 22nd 1916, in which an allowance is made for an additional 2,000,000 kips for tanning in India. The Committee understand that this question is to be specifically dealt with by the Indian Industries Commission, and they only allude to it now in view of its importance in safeguarding the maintenance of values by providing another outlet for Indian kips and by increasing the market for their sale. The Committee look forward to a considerable extension of tanning in India, and trust that the Government of India will afford it every encouragement and whatever financial support may seem desirable.

III. Conclusions

The investigations of the Committee have thus shown that, subject to the conditions set forth in this report, British firms in India are willing to enter the hide trade and to deal with the whole of the kips available for export and that British tanners are prepared to put forward a scheme to deal with an increasing quantity, and ultimately with 4,000,000 kips annually. In view of the past history of the trade in raw Indian kips, the Committee consider that conditions such as those desired alike by the mercantile firms and the tanners are essential for the attainment of the purpose in view, and they would strongly urge that the necessary measures should now be taken to secure this important and valuable trade for the Empire.

There can be little doubt that after the war Germany and Austria, if only for military reasons, will make strong efforts to regain their former position in the Indian hide trade, and it is probable that they may succeed in these endeavours unless effective counter-measures are adopted. It seems highly desirable that in future Indian kips should be utilised as the basis of an important tanning industry within the Empire, instead of being, as hitherto, a source of profit chiefly to German and Austrian tanners and mercantile firms.

Further progress with the scheme outlined by the British tanners will not be possible until it has been decided whether the conditions for which they ask will be granted. The Committee therefore desire to submit this Report for the consideration of the Secretary of State, and will be glad to learn as soon as possible the views of the Government of India on the proposals. In the meantime the Committee understand with much satisfaction that the War Office propose to purchase, until the end of the war, through specified firms, all the raw hides which can be exported from India, and that these are to be tanned in this country for military purposes.

The Committee recognise that the question of affording State assistance to the tanners in this country is one which chiefly concerns His Majesty's Government, but there are prior questions affecting the Government of India which must first be dealt with. In the event of the Government of India being prepared to carry out the suggestions now made, the tanners would propose to approach His Majesty's Government for the financial assistance required.

(*Signed*) WYNDHAM R. DUNSTAN (*Chairman*).
W. E. COOPER.
H. PERCY DENSHAM.
W. L. INGLE.
HENRY LEDGARD.
CECIL J. LONGCROFT.
EDWARD PENTON.

HAROLD BROWN (*Secretary*).

March 30th, 1917.

ADDENDUM

In their Report on Raw Cowhides of March 30th, 1917, the Committee expressed general approval of the conditions formulated by those firms who intend to operate in India and by tanners in this country. In view, however, of recent developments in connection with trade during the war, the Committee recognise that in any licensing or fiscal arrangements which may be considered desirable some consideration will have to be extended to any foreign firms, of nations allied to the British in the present war, who desire to obtain Indian kips for their own consumption.

May 2nd, 1918.

II

THE IMPROVEMENT OF THE QUALITY OF INDIAN HIDES

In dealing with the question of the trade in raw Indian cowhides the Committee recognised that it would be advantageous if steps could be taken in India to introduce better methods of preparing the hides and thereby to effect a considerable improvement in their quality and value. It was considered that this question could be best dealt with in a separate memorandum, and the Committee now desire to submit a statement on this important question.

The defects exhibited by Indian cowhides may be illustrated by the case of the kips from the Dacca district. It is stated that these kips are intrinsically the best produced in Bengal, but that their value is very greatly reduced by the method of preparation adopted, which has shown no improvement during the last fifty years.

Dacca kips are a useful class of hide, being generally of good pattern and fairly well grown. Great injury is, however, done to the hides by the unskilful way in which they are taken from the animal, and the method of curing adopted is not very satisfactory.

The flaying is very badly done, and many of the hides are spoilt by butcher cuts (that is, gashes made with the knife) which penetrate the substance of the hide. Another serious defect is the large amount of flesh left on the hides, the result being that, notwithstanding the cure, putrefaction is liable to take place in the thick portions of flesh, and then to extend to the hide. If the butcher cannot take off the hide in a clean and workmanlike manner, the hide should be scraped afterwards so as to remove the superfluous flesh.

The Dacca hides are dry salted, and an excessive amount of the earthy salt used for the purpose is frequently em-

ployed with the object of increasing the weight of the hides. This procedure adds considerably to the cost of transit.

These Dacca hides would be enhanced in quality if the flaying were improved and the hides were then thoroughly cleaned of all flesh, fat and extraneous matter before salting; and if the salting were lightly done with just sufficient salt to keep the hides sound, but not enough to cause unnecessary weight. This procedure might also be adopted with advantage in other parts of India, where the method of sun-drying and arsenicating is not suitable, and in the United Provinces and elsewhere during the rainy months, when sun-drying and arsenicating cannot be carried out.

The method suggested above has been adopted to some extent in India already, and the hides so treated are stated to have been very popular in the European markets.

Defects also occur in the hides from most of the other districts of India, where, however, the hides are usually arsenicated instead of being salted.

Bengal kips derived from the north-west are generally well prepared, and everything is done to obtain good flaying and to avoid extraneous weight. Defects inherent to the conditions under which the cattle live cannot of course be eradicated, nor can fallen cattle furnish hides of the growth and quality of those obtained from well-fed slaughtered beasts. No remedy is possible in this connection, and it is difficult to see how improvement can be effected.

The raw hides shipped from Karachi are mostly air- or sun-dried and arsenicated. The hides are always well dried out, and carry little extraneous weight. The proportion of slaughtered hides is small, the best coming from the Sukkur district, but, though mainly obtained from dead cattle, Karachi hides are in general of good growth. The flaying is, however, far from perfect, and could be considerably improved.

Bombay only ships raw kips in famine years or under exceptional circumstances. If the ordinary supply is in excess of the local demand or the requirements of Madras tanners, the surplus is sent to Calcutta. All the hides

from the Bombay Presidency are notoriously defective in the matter of flaying, and the bulk of the supply is derived from fallen cattle. Even the comparatively small quantity of butchered hides are badly flayed, as is seen in the tanned hides which come to the United Kingdom.

Burma is an important producer and exporter of hides, and the trade has developed progressively during the last thirty years. The exports include hides of strikingly divergent quality and growth. The annexation of Upper Burma assisted to extend the area of collection, and hides are now brought down to the chief port of shipment from the entire coast line and from the Shan States, China, Annam and the whole northern region. This trade is only in its infancy and is capable of vast development. The southern supply is of flat growth, but from fair-sized cattle, and the hides are received and shipped in a sun-dried state and arsenicated. On the coast, particularly in the north, the hides are heavily cured and very badly flayed. From the high lands on the north-east, and from China, very fine hides are obtained. Considerable quantities of wet salted hides are shipped from Rangoon, and this is a good method if the hides are freshly killed and can be properly treated at once. This, however, is not the case with any considerable quantity of hides, and the application of the process to hides already dried is a mistake.

In view of these facts the Committee desire to suggest that the question of improving the preparation of Indian hides should be carefully considered by the Department of Commerce and Industry in India, in consultation with the Chambers of Commerce interested and with the Hides Associations. The adoption of a system of bonuses to the native producer for well-flayed and well-cured hides would probably have a very beneficial influence on the quality of the hides brought in for sale, and the possibility of starting a definite organisation in India for the improvement of the hides might also be considered.

In the latter connection reference may be made to the work of the Hide, Leather and Allied Trades Improvement Society in the United Kingdom.

This Society was formed with the objects of improving the flaying of hides produced in the United Kingdom,

and of promoting the accurate selection of the hides, both with regard to weight and quality. The tanners and the Hide Markets Authorities combined for this purpose, and after the Society had been in existence for some time the butchers also asked for representation on the Central Committee. A standard of quality was laid down, based on four or five of the best markets in England, and the whole of England, Scotland and Ireland was divided up into six districts. A travelling inspector was appointed to each district, and more recently the Society has added a supervising inspector, who has a roving commission to move from one district to another in order to ensure that the inspectors are keeping to the same standard. Every market in the United Kingdom has a special stamp, with which the hides must be stamped as firsts, seconds or thirds, and the inspector's duty is to go round to each market at least once a week, when he challenges any pile of hides, goes through them to see that they are classed correctly, and puts them on the scale to see that they are correctly weighed. On every hide there is a fee of ½*d.* known as the inspection fee, which is added to the tanner's invoice by the brokers. These ½*ds.* are forwarded to the Secretary of the Society by the various Hide Markets, with a return of the number of hides each week. About 50,000 hides are dealt with each week, and the ½*d.* fee brings in sufficient to finance the whole organisation and to leave a surplus. The tanners have bound themselves to buy all home-slaughtered British and Irish hides through the recognised markets.

There are various rules with regard to the settlement of disputes by arbitration. In each district there is a Committee consisting of an equal number of tanners, hide-market representatives and butchers, and in all cases of arbitration one of each class is nominated as arbitrator to examine any hide or hides. There is no fee arranged for this, but out-of-pocket expenses are paid.

The Society, prior to the war, arranged for hide-flaying competitions and gave prizes. It also had two travelling instructors going round the country instructing butchers how to take off a hide, and as a result great improvement was effected in different districts.

Particulars relating to the organisation of the Society and its work are given in the attached papers.[1]

The operations of this Society have greatly improved the preparation of the hides produced in the United Kingdom, and facilitated their marketing. The hides are now much better flayed and of better shape than formerly; the horns and the tail bone are removed before weighing; the weight and quality are stamped on each hide, these points being constantly checked by inspectors, and the market or place where the animal was slaughtered is also indicated.

An organisation of this kind, modified to suit Indian conditions, would effect very great improvements in the quality of Indian hides, and it would be desirable to consider in India whether a similar society could not be formed. In the meantime the introduction of a system of bonuses to the native producer for well-prepared hides would no doubt be advantageous.

The Committee would suggest that the whole question of the improvement of the raw hides should be carefully investigated in India, as there is no doubt that the quality and value of the hides could be very greatly increased by proper treatment.

July 26th, 1917.

[1] Not reprinted.

III

PROSPECTIVE MARKETS FOR RAW INDIAN COWHIDES IN CANADA, SOUTH AFRICA AND AUSTRALIA

IN their Report on the Trade in Raw Cowhides (kips), dated March 30th, 1917, the Committee made suggestions as to the measures which might be taken to ensure the tanning of these Indian hides on a large scale in the United Kingdom after the war. The Committee were also of opinion that the kips could be utilised in some of the Dominions, and enquiries were accordingly instituted as to the possibilities in Canada, South Africa and Australia. These enquiries have given promising results, and the following statement can now be furnished as to the prospective markets for raw Indian kips in these countries.

CANADA

In October 1916 a memorandum was forwarded to the High Commissioner for Canada on behalf of the Committee drawing attention to the supplies of raw Indian kips which were available owing to the closing of the German and Austrian markets, and pointing out the desirability of utilising these kips so far as possible within the Empire. Particulars were supplied as to the selections and weights of the kips and of the character of the leather which they furnish. It was suggested that the hides would be suitable for use by tanners in Canada, and the High Commissioner was requested to obtain information on this point.

As a result of the circulation of this memorandum by the Department of Trade and Commerce in the Dominion a number of Canadian tanners expressed considerable interest in the matter. Several firms stated that they could probably utilise large quantities of the hides ; others requested that they might be supplied with sample bales

for trial; whilst others expressed a desire to inspect representative samples.

By the time this information was received the War Office had taken over the entire supply of Indian kips for army purposes, so that it was not possible to send commercial shipments to Canada, but the Committee obtained permission to forward a few bales to tanners in the Dominion who had specially asked for samples for trial. Further, in view of the interest taken in Canada in these Indian kips, and the desire of firms to inspect samples, the Committee decided to send for exhibition in Canada a representative collection of the kips, for which they are indebted to the kind interest of Messrs. David Sassoon & Co. This exhibit consisted of sample bales of eleven representative classes of the kips, and was despatched in September 1917. Copies of a memorandum giving full particulars of the hides included in the exhibit were also forwarded by the Committee for distribution to tanners in Canada.

Arrangements were made by the Department of Trade and Commerce to exhibit this collection of kips at various centres throughout the Dominion, and invitations were sent to tanners in the respective provinces to visit the exhibition and express their opinions on the hides. As a result of this action further interest has been aroused in the subject, and several additional firms stated that they could utilise these hides if they were obtainable in suitable weights and qualities.

It would appear that the tanning of dry hides has not hitherto been generally practised in Canada, and some time may therefore elapse before the value of Indian kips is fully appreciated by tanners in the Dominion.

The Committee also suggested to the War Office that the kips of light weights, and the rejections which are not required for military purposes, might find a market in Canada if freight were available. This suggestion was approved by the War Office, and information as to the selections and weights of the hides in question was sent to Canada for circulation to tanners throughout the Dominion.

At present the Canadian tanning industry is stated to

be handicapped by a shortage of tanning materials, but it is hoped that ultimately the action taken by the Committee will result in a demand for Indian kips in Canada.

Union of South Africa

Similar enquiries were also instituted by the Committee as to the possible market for Indian kips in South Africa, and as a result requests were received from firms of tanners in South Africa for small consignments of the hides for trial, whilst other firms expressed a wish to inspect samples. The general opinion of the firms consulted was that there should be a good market in the Union for these Indian hides if they could be offered at a satisfactory price.

The Committee therefore arranged for representative shipments of the hides to be sent direct from Calcutta to South Africa, and these were disposed of by the Department of Mines and Industries at Pretoria to tanners in the Union. Several of these firms have now reported on their trials with the hides, and have expressed very favourable opinions regarding them, one firm stating that they are convinced that the supply from India of hides of this class will be the salvation of the upper-leather manufacturers in South Africa.

Steps are now being taken by South African tanners to obtain regular consignments of kips as soon as freight is available. There is therefore a good prospect of trade in these hides being established between India and South Africa.

Australia

A similar memorandum to those furnished to Canada and South Africa was forwarded in October 1916 to the Commonwealth Government, who referred the matter to the Ministry of Trade and Customs. In March 1917 the Ministry replied that it did not seem possible to find a market for Indian hides in Australia, but later on the Federated Master Tanners' and Leather Manufacturers' Association of Australia asked for particulars of the Indian hides available, and stated that there were indications that there might be a good demand for these hides in

Australia. In reply the Committee furnished full particulars regarding the different classes of Indian kips, and offered to consider the despatch of a collection of Indian hides for exhibition in Australia if this was desired.

From the foregoing summary of the operations of the Committee as regards the three Dominions mentioned, it appears probable that when conditions become normal a market will be found for Indian kips both in Canada and South Africa, and that there is a possibility that a certain quantity might also be saleable in Australia. The principal firms in India interested in the sale of kips have been informed of the facts.

May 9th, 1919

IV

THE TRADE IN INDIAN BUFFALO HIDES

THE Indian exports of buffalo hides, both raw and tanned, and the countries to which they were shipped, are shown in the appended tables, which give the complete statistics for the four years 1912–13 to 1915–16. Buffalo hides were not classified separately in the Indian returns prior to 1912–13, and the destinations of the exports in 1916–17 are not yet available. No particulars of the imports of buffalo hides into the United Kingdom can be furnished, as the trade statistics for this country only give the total figures for raw hides of all classes.

The annual exports of raw buffalo hides from India in the two years preceding the war (1912–13 and 1913–14) were about 345,000 cwt., and of the tanned hides about 16,000 cwt., representing a total exportable surplus of about 360,000 cwt. annually. Since the war the exports of the raw hides have declined, being only 163,000 cwt. in 1915–16, but rising again to 261,000 cwt. in 1916–17. On the other hand the exports of the tanned hides increased to over 24,000 cwt. in both 1914–15 and 1915–16, and to 32,000 cwt. in 1916–17.

The tanned buffalo hides exported from India are taken almost entirely and utilised by the United Kingdom, so that no difficulty arises as to the disposal of these hides.

Before the war the raw hides went principally to enemy countries and to the United States. In 1913–14, when the exports amounted to 345,864 cwt., enemy countries took 44·5 per cent. of the total (35·4 per cent. going to Germany and Austria, principally to the latter country);

the United States took 33·1 per cent. ; and the United Kingdom 7·6 per cent. In this year therefore Germany and Austria together took a larger share of the raw hides than the United States. Since the war the United Kingdom and the United States have taken nearly the whole of the raw buffalo hides exported from India, and in 1915–16, when the exports were only 162,887 cwt., the share of the United Kingdom was 25·6 per cent. of the total, and that of the United States 66·6 per cent. In 1915–16, therefore, the United States was by far the largest buyer.

In view of the considerable proportion of raw Indian buffalo hides taken by enemy countries before the war, the Committee are of opinion that it is important in this case, as in the case of raw cowhides, to consider the future of the trade, and if possible to devise means to tan these hides within the Empire.

This question had already received the attention of the Trade after the War Committee of the United Tanners' Federations, who, after fully considering the subject, passed a Resolution, a copy of which was supplied to the Hides and Tanning Materials Committee, stating their opinion that all the available buffalo hides could be easily absorbed within the Empire, and advocating steps to encourage this.

After considering the above-mentioned facts, the Committee decided to make the following recommendations :

(1) That the tanning of buffalo hides should be encouraged in India. This would tend (*a*) to extend the use of the leather in India ; (*b*) to increase the exports of tanned hides, which are taken by the United Kingdom ; and (*c*) would reduce the number of raw hides available for export. In connection with (*b*) the Committee would point out that the buffalo hides tanned in India at the present time, and shipped from Madras and Bombay, are excellent for dressing purposes, but that an additional quantity could be absorbed in the United Kingdom if the medium and heavy hides were tanned with materials that would produce a more solid and firm leather, thus making an article suitable for sole leather.

The Committee understand that His Majesty's Government is contemplating the purchase, during the period of the war, of the available surplus of Indian buffalo hides for military purposes.

(2) That with reference to the raw buffalo hides exported from India, arrangements should be made, as in the case of raw cowhides, (*a*) for British and Indian firms to undertake the collection and shipment of the hides; and (*b*) for tanners within the Empire to convert them into leather.

With reference to (*a*) Messrs. D. Sassoon & Co., Ltd., Messrs. Bird & Co., and Messrs. Cooper, Allen & Co., Ltd., are already dealing in buffalo hides. It is understood that Messrs. Allen Bros. & Co., Ltd., will enter the business of buying and shipping raw buffalo hides, and also that Messrs. H. T. Pearson & Co. will conduct this business through agents in Calcutta. In the cases of all these firms the Committee understand that the continuance in the trade will depend on the removal of the firms of former German connection from this trade. The Committee would refer to the recommendations they have made in this connection in their Report on the Trade in Raw Cowhides (see particularly pp. 6–8). There can be no doubt that other British firms will be willing, if necessary, to enter the business.

With reference to (*b*), viz. the extension of the tanning of the hides within the Empire, the Committee are of opinion that Indian buffalo hides could be utilised for the following purposes:

(1) The lightest hides would be used, as at present, for upper leather.
(2) The medium weights are believed to be suitable for all work for which shoulders are now employed, *e.g.* in-soling.
(3) The heaviest hides could be chrome or vegetable tanned for soles; chrome tanned for picking bands; or used raw for pickers.

The Committee believe that increasing quantities of raw buffalo hides could be tanned in this country, and there may be some demand in the Dominions, especially in

Canada. Enquiries will be made by the Committee on this subject.

WYNDHAM R. DUNSTAN (*Chairman*).
A. YUSUF ALI.
W. E. COOPER.
H. PERCY DENSHAM.
CECIL GRAHAM.
W. L. INGLE.
HENRY LEDGARD.
CECIL J. LONGCROFT.

HAROLD BROWN (*Secretary*).

January 9th, 1918.

APPENDIX TO REPORT ON THE TRADE IN INDIAN BUFFALO HIDES

Exports of Raw Buffalo Hides from India

	1912–13	1913–14	1914–15.	1915–16	1916–17.
Total exports (*cwt.*) .	345,037	345,864	211,745	162,887	261,099
,, value (£) . .	1,266,071	1,469,113	921,993	621,837	1,351,626
TO BRITISH COUNTRIES[1]	*Cwt.*	*Cwt*	*Cwt.*	*Cwt*	*Cwt.*
Total . .	51,127	31,893	53,019	42,820	Details not available.
United Kingdom .	46,551	26,254	52,062	41,711	
Other British countries . . .	4,576	5,639	957	1,109	
TO ALLIED COUNTRIES .					
Total . .	164,945	126,786	110,552	118,815	
Russia . . .	—	—	71	—	
Belgium . .	2,468	1,417	287	—	
France . . .	6,646	3,232	1,368	55	
Italy . . .	10,921	7,150	1,322	10,251	
Rumania . .	1,052	499	386	—	
United States .	143,766	114,476	107,074	108,495	
Other countries .	92	12	44	14	
TO ENEMY COUNTRIES :					
Total . .	99,079	153,896	41,504	—	
Germany . .	22,148	30,785	7,744	—	
Austria-Hungary .	58,276	91,736	20,799	—	
Bulgaria . .	2,966	1,241	2,684	—	
Turkey . .	15,685	30,134	10,277	—	
German East Africa	4	—	—	—	
TO NEUTRAL COUNTRIES :					
Total . .	29,886	33,289	6,670	1,252	
Holland . .	25,966	32,485	3,097	—	
Spain . . .	3,721	667	1,098	246	
Greece . . .	76	106	2,367	515	
Persia . . .	123	31	108	—	
Norway . .	—	—	—	491	

[1] *Including Egypt*

Raw Buffalo Hides were not shown separately in the Indian statistics prior to 1912–13.

Exports of Tanned Buffalo Hides from India

	1912–13.	1913–14.	1914–15.	1915–16	1916–17.
Total exports (*cwt*) . .	17,004	15,545	25,261	24,234	32,346
,, value (£) . . .	78,612	75,127	157,520	145,102	241,151
To British Countries[1]:	Cwt	Cwt	Cwt.	Cwt.	Cwt
Total	16,538	14,884	24,582	24,234	Details not available.
United Kingdom . .	14,704	14,047	24,371	23,894	
Other British countries .	1,834	837	211	340	
To Allied Countries:					
Total	47	32	170	—	
United States . . .	27	32	170	—	
China	20	—	—	—	
To Enemy Countries:					
Total	392	613	509	—	
Austria-Hungary . .	—	66	—	—	
Turkey	336	499	488	—	
German East Africa . .	56	48	21	—	
To "Other Foreign Countries"					
Total	27	16	—	—	

[1] *Including Egypt.*

Tanned Buffalo Hides were not shown separately in the Indian statistics prior to 1912–13.

V

THE TRADE IN INDIAN GOAT AND SHEEP SKINS

THE goat and sheep skins exported from India are largely utilised for the same purposes, and it will therefore be convenient to deal with the two classes of skins together.

Complete statistics of the exports of Indian goat and sheep skins, both raw and tanned, during the seven years 1910–11 to 1916–17, are given in the appended tables, I, II, VII, and VIII. The statistics used throughout this report are taken in all cases from the official returns of the respective countries.

The average quantities and values of the raw and tanned skins exported annually from India during the four years preceding the war (1910–11 to 1913–14) were approximately as follows:

	Quantity.	Value.
Goat skins, raw	490,000 cwt 20,500,000 skins	£2,167,000
Goat skins, tanned	74,000 cwt. 8,300,000 skins	£1,045,000
Sheep skins, raw	29,000 cwt 2,114,000 skins	£138,000
Sheep skins, tanned	58,700 cwt. 9,220,000 skins	£747,000

It will be seen from these figures that the Indian export trade in goat skins is of much greater importance than that in sheep skins. The total annual exports of goat skins, both raw and tanned, before the war averaged 560,000 cwt., valued at over £3,000,000, whereas the total exports of sheep skins were less than 90,000 cwt., valued at about £900,000.

In the following report the raw and tanned skins are treated separately, as the conditions are markedly different in the two classes.

I. Tanned Skins

Tanned Goat Skins.—The quantities of tanned goat skins exported annually from India during the four years preceding the war (1910–11 to 1913–14) ranged from 61,741 cwt. to 83,665 cwt., with an average of 74,000 cwt. The exports during the three subsequent years, 1914–15, 1915–16 and 1916–17, were 61,288 cwt., 70,773 cwt. and 83,861 cwt. respectively (see Table II).

The tanned skins are chiefly exported from the Madras and Bombay Presidencies; they are collected, tanned, shipped and financed by British and Indian traders, and are practically all forwarded to London, where they are disposed of at the public sales held monthly. Out of the 74,000 cwt. of tanned goat skins which India normally exported annually before the war, about 67,500 cwt. were shipped to the United Kingdom.

The tanned goat skins imported into the United Kingdom are, however, only utilised to a limited extent in this country, the greater part being re-exported. Full statistics of the United Kingdom trade in tanned goat skins since 1913 are given in Tables III and IV, and the following summary shows the balance of the imports over the re-exports:

United Kingdom Trade in Tanned Goat Skins [1]
(Classed as Leather, Undressed)

	1913 Cwt.	1914. Cwt	1915. Cwt.	1916 Cwt.	1917. Cwt.
Total imports	77,287	73,148	67,214	84,758	36,588
Total re-exports	65,342	57,544	39,434	70,344	27,015
Balance	11,945	15,604	27,780	14,414	9,573

1 *Separate statistics not available prior to* 1913

The drop in the imports of tanned goat skins into the United Kingdom in 1917 is explained by the fact that subsequent to February 23rd, 1917, the importation of dressed and undressed leather was prohibited except under licence, and that in India the tanning of skins was forbidden in order to increase the supply of tanned hides.

In 1913, the last complete year before the war, the total imports into the United Kingdom of tanned goat skins were about 77,000 cwt., of which 63,000 cwt. were received

from India and 12,500 cwt. from British West Africa. Ir the same year 65,000 cwt. of tanned goat skins were re exported from the United Kingdom to the followinɛ countries :

Germany and Austria	32,000 cwt. = 49 per cent[1]
United States	22,000 cwt. = 34 per cent.
Other countries	11,000 cwt. = 17 per cent.

[1] *Germany alone took* 41·6 *per cent.*

The quantity of tanned goat skins retained in the United Kingdom in 1913, *i.e.* the excess of the imports over the re-exports, was about 12,000 cwt., representing 15 per cent. of the total imports.

It will thus be seen that before the war the collecting tanning, shipping and financing of the Indian tanned goat skins, and their disposal in the London market, were in the hands of British and Indian firms, whereas the further treatment of the leather, and the manufacture from it of fancy articles, etc., were carried on principally in foreign countries.

Since the outbreak of the war the re-export of tanned goat skins from the United Kingdom has been modified by the fact that Germany and Austria have not been able to purchase in the London market, but the quantities taken by the United States have largely increased, reaching 57,216 cwt. in 1916, or over two and a half times the amount taken in 1913.

The quantities of tanned goat skins retained in the United Kingdom in the four years 1914 to 1917 varied from 9,573 cwt. to 27,780 cwt. in 1917 and 1915 respectively.

Tanned Sheep Skins.—The exports of tanned sheep skins from India during the four years preceding the war (1910–11 to 1913–14) ranged from 49,652 cwt. to 62,792 cwt., with an average of 58,700 cwt. In 1914–15 and 1915–16 the exports were 45,978 cwt. and 49,345 cwt. respectively, and in 1916–17 they increased to 67,792 cwt. (see Table VIII).

The tanned Indian sheep skins have been principally shipped to the United Kingdom, but, as shown in the following table, the United States and Japan have also taken considerable quantities :

Exports of Tanned Sheep Skins from India

	1910–11. Cwt.	1911–12. Cwt.	1912–13. Cwt	1913–14. Cwt.	1914–15. Cwt.	1915–16. Cwt.	1916–17. Cwt.
Total exports .	62,792	62,081	60,355	49,652	45,978	49,345	67,792
To United Kingdom	40,395	38,306	34,944	29,202	29,180	31,553	43,161
To United States .	9,936	11,647	13,382	10,365	6,209	9,770	16,066
To Japan . .	7,450	8,732	9,129	7,459	8,424	5,803	6,428

The proportions of the total exports taken by these countries in the years 1913–14 to 1916–17 are given below :

Percentage of Total Exports

	1913–14	1914–15.	1915–16.	1916–17
United Kingdom	58·9	63·5	64·0	63·6
United States	20·9	13·5	19·8	23·7
Japan	15·0	18·3	11·8	9·4
	94·8	95·3	95·6	96·7

These figures show that the United Kingdom, the United States, and Japan together take about 95 per cent. of the tanned sheep skins exported from India, the share of the United Kingdom being about 60 per cent. of the total.

It must be pointed out, however, that the tanned sheep skins imported into the United Kingdom are not all utilised in this country, there being a considerable re-export of the leather. The statistics of the imports and re-exports since 1913 are given in the following table :

United Kingdom Trade in Tanned Sheep Skins [1]
(Classed as Leather, Undressed)

	1913 Cwt	1914. Cwt.	1915. Cwt.	1916. Cwt.	1917. Cwt.
Total imports .	88,646	74,652	90,316	72,164	47,870
Total re-exports .	49,938	29,087	9,994	35,501	14,158
Balance .	38,708	45,565	80,322	36,663	33,712

[1] *Separate statistics not available prior to* 1913.

The reduction in the imports of tanned sheep skins into the United Kingdom in 1917 was due to the causes already referred to on p. 29 in connection with tanned goat skins.

It will be seen from these figures that the re-exports have varied considerably in the five years. In 1913 more than half the tanned sheep skins imported into the United Kingdom were re-exported, and this proportion was again nearly reached in 1916. The quantities re-exported in

1914, 1915 and 1917 were, however, not so large, and amounted respectively to 39 per cent., 11 per cent. and 29·5 per cent. of the total imports.

The complete United Kingdom statistics of the imports and re-exports of tanned sheep skins, with the countries of origin and destination, are given in Tables IX and X for reference. The figures show that India supplied from 36·5 to 44·3 per cent. of the total imports in the three years 1913 to 1915, and 62·6 per cent. in 1916, but it is not possible to state the quantities of Indian skins included in the re-exports. The tanned sheep skins re-exported from the United Kingdom were principally shipped before the war to Germany, Austria, the United States and Holland, and latterly have been taken almost entirely by the United States.

The position with reference to tanned Indian sheep skins is therefore similar to that of the tanned Indian goat skins. The collecting, tanning, shipping and financing of the skins are carried out by British and Indian firms, and about 60 per cent. of the total exports are disposed of in the London market. A considerable proportion (about half in 1913 and 1916) of the tanned sheep skins imported into the United Kingdom are, however, re-exported to foreign countries, where the leather is employed for the manufacture of fancy articles, etc.

Suggestions for Tanned Goat and Sheep Skins.—The Committee realise that since the war an extended market has been found for these Indian tanned skins in the United States, but they consider that it is desirable that greater efforts should be made to dress and manufacture a larger proportion of this leather within the Empire. This question has received the attention of the United Tanners' Federations, who appointed a Committee to consider the steps which might be taken (*a*) to develop the dressing of these skins in large quantities in the United Kingdom, to improve the method of dressing the skins and to introduce a more up-to-date system of marketing them; and (*b*) to stimulate the manufacture of fancy leather goods in this country. This Committee has held a number of meetings, an important outcome of which has been to secure a distinctly large measure of co-operation

between the leather dressers and the manufacturers of fancy leather goods.

It is understood that this Committee have expressed the following opinions :

That it is quite possible to increase largely the use of tanned Indian goat and sheep skins in this country, provided that—

(1) There is a plentiful supply of the tanned skins on this market ;
(2) That the Fancy Goods Trades and the Boot and Shoe Trade do their best to co-operate in the sale of articles made from this class of material ; and
(3) That the manufacturers of these goods in England standardise and produce them in large quantities, which they are ready to do as soon as war conditions allow.

The Tanners' Committee state that the manufacturers of fancy goods were unanimous as to the necessity of an import duty in the United Kingdom on fancy leather goods imported from abroad, so as to enable them to meet successfully competition from enemy countries. Amongst the dressers and finishers of Indian goat and sheep skins opinion was divided, the general feeling being that some form of preference would be necessary to enable the English manufacturers to build up a larger trade in the finished leather made from these skins. Some of the dressers and finishers were in favour of a preferential export duty, with a rebate to the dressers and finishers within the Empire ; others advocated an import duty in the United Kingdom on leather dressed from Indian tanned goat and sheep skins ; whilst others again would prefer the market to be left open as hitherto, subject to a restriction being placed on enemy countries dealing on the Indian market.

The Tanners' Committee are also of opinion that the Boot and Shoe Trade will co-operate as far as possible in the development of their branch of the industry by using the tanned goat and sheep skins.

The Committee have considered these views of the Committee appointed by the United Tanners' Federations, and are of opinion that, if the general desire of the trade

for some form of preference or protection can be met, an extended use for Indian tanned goat and sheep skins will arise in the United Kingdom after the war. The collecting, tanning, shipping and financing of the larger quantity of skins will continne to be conducted by British and Indian firms in India.

II. Raw Skins

Raw Goat Skins.—The exports of raw goat skins from India during the four years preceding the war (1910–11 to 1913–14) ranged from 453,356 cwt. to 520,954 cwt., with an average of 490,000 cwt. In 1914–15 and 1915–16 the exports were 382,060 cwt. and 399,951 cwt. respectively, and increased to 521,808 cwt. in 1916–17 (see Table I).

The United Kingdom statistics relating to raw goat skins are given in numbers of skins and not in weights, and it will therefore be convenient to consider the Indian export figures in this form. Before the war India exported approximately 20,500,000 raw skins annually, and the principal destinations of these skins in the years 1912–13 and 1913–14 are shown in the following table :

	1912–13. (Number.)		1913–14 (Number.)	
Total exports of raw goat skins from India		21,716,896		19,690,958
	Number.	Per cent. of total.	Number.	Per cent. of total.
To United Kingdom. . .	2,109,517	9·7	1,412,071	7·2
„ United States . . .	15,470,493	71 3	14,325,941	72·7
„ France . . .	1,646,316	7 6	1,140,648	5·8
„ Holland and Belgium . .	1,301,949	6 0	1,887,468	9·6
„ Germany	770,432	3 5	647,447	3·3
„ Austria	108,392	0 5	102,724	0·5

It will be seen from these figures that in the last two years before the war the United States took over 70 per cent. by number of the raw goat skins exported from India, and that the share of the United Kingdom was less than 10 per cent. of the total. In 1915–16, when the total exports were 19,619,000 skins, the proportion taken by the United States rose to 89·4 per cent. (17,527,000 skins), compared with 6·6 per cent. (1,289,000 skins) shipped to the United Kingdom. The United States is

therefore the principal buyer of raw Indian goat skins, and the attached summary of the imports of raw goat skins into that country (Table XI) shows that usually India has supplied about one-third of the total.

Complete statistics of the United Kingdom trade in raw goat skins are given in Tables V and VI, from which it will be seen that the total number of these skins imported annually into the United Kingdom during recent years has been approximately 12,000,000, and the quantity re-exported 8,000,000, leaving about 4,000,000 as the annual consumption in this country. In 1916, however, the excess of imports over re-exports fell to 2,634,000 skins, but increased again to 5,209,000 skins in 1917. This increase was due to the refusal of the Government to grant licences for the re-export of certain shipments, which were therefore sold to merchants in the United Kingdom.

During the three years before the war the United States took 6,500,000 to 7,000,000 of the 8,000,000 raw goat skins re-exported from the United Kingdom, and in 1915 and 1916 the quantities increased still further to 8,344,000 and 7,843,000 skins respectively out of total re-exports of 8,524,000 and 8,728,000 skins.

The following table shows the numbers of raw Indian goat skins imported into the United Kingdom, and the numbers retained here in recent years, according to the United Kingdom Statistics :

Goat Skins, Undressed

	1912	1913.	1914	1915.	1916.
Imports into the United Kingdom from British India	5,499,192	5,933,071	3,648,301	4,988,277	5,926,264
Number of Indian skins retained in the United Kingdom .	1,217,481	1,149,836	710,055	1,437,680	511,662

These figures show that in 1912, 1913 and 1915 less than 1,500,000 raw Indian goat skins were retained annually in the United Kingdom, and that in 1914 and 1916 the quantity retained was less than three-quarters of a million.

It will be noticed that the number of raw goat skins given in the United Kingdom trade returns as imported into this country from India in 1912 and 1913 (viz. from

5,500,000 to 6,000,000) is very much greater than the numbers (about 1,500,000 to 2,000,000) shown in the table on p. 34 which are taken from the Indian export figures for 1912–13 and 1913–14. The explanation of this considerable discrepancy, which is a constant feature of the two sets of figures, may be that a large number of the Indian skins included in the United Kingdom returns are brought to this country for transhipment to the United States or other foreign countries, and are credited to these countries in the Indian returns.

Raw Sheep Skins.—The exports of raw sheep skins from India during the four years preceding the war (1910–11 to 1913–14) ranged from 23,496 cwt. to 33,067 cwt., with an average of 29,000 cwt. In 1914–15 and 1915–16 the exports were 26,295 cwt. and 32,517 cwt. respectively, and increased to 45,314 cwt. in 1916–17 (see Table VII).

The bulk of the raw sheep skins exported from India have been shipped to the United States, as will be seen from the following table :

	1910–11. Cwt.	1911–12. Cwt.	1912–13. Cwt.	1913–14. Cwt	1914–15. Cwt	1915–16. Cwt.	1916–17 Cwt
Total exports .	23,496	28,330	31,668	33,067	26,295	32,517	45,314
To United States .	16,744	23,200	28,986	28,818	24,682	31,404	43,884
,, United Kingdom .	172	642	1,081	1,599	326	340	60

In 1913–14, the last year before the war, the United States took 87·3 per cent. of the raw sheep skins exported from India, and in 1915–16 the proportion was no less than 96·6 per cent. out of a similar total. In 1916–17, when the Indian exports increased to 45,314 cwt., the United States took 96·9 per cent. of the total. The quantities taken by the United Kingdom were insignificant.

A summary of the United States import statistics relating to raw sheep skins is appended (Table XII), from which it will be seen that India's contribution to the total is very small, amounting on the average to about 6½ per cent.

Suggestions for Raw Goat and Sheep Skins.—The raw Indian goat and sheep skins imported into the United States are purchased by the chrome tanners in that country, who manufacture them into glacé kid for the upper

leather of boots. A very large proportion of this glacé kid is exported from America, and during recent years the United Kingdom has taken about 40 per cent. of the total exports, to the value of nearly £1,500,000 annually.

The Committee are informed that the question of increasing the production by chrome tanning of glacé kid in the United Kingdom is engaging the attention of the United Tanners' Federations, but that the proposals of the tanners for attaining this object have not yet been finally formulated. It is understood that the amount of glacé kid produced in this country has increased during the war.

The Committee believe that there will be an opportunity after the war for a great extension of chrome tanning throughout the Empire. Large quantities of raw goat skins are available in British possessions, and it seems desirable that a much larger proportion should be manufactured in future within the Empire.

British tanners may, however, find it difficult to procure supplies of raw goat skins in competition with the already established American trade, and in this connection an attempt has been made to ascertain so far as possible the world's exportable surplus of raw goat skins, and the proportion of the total which is supplied by India and the Empire as a whole. Some statistics bearing on this question are appended (Table XIII), but it is not possible to obtain definite figures of the exports of raw goat skins from all the producing countries, as in some cases goat skins are grouped with other skins or with hides in the returns. The figures which have been collected indicate, however, that the world's exportable surplus of raw goat skins amounted in 1912 and 1913 to about 160,000,000 lb. (1,430,000 cwt.), and that of this total the British Empire contributed about 45 per cent. and India alone about 33 per cent. It will be seen from the table that India is by far the largest exporter of goat skins in the world, supplying, as already indicated, about one-third of the world's total exportable surplus. Other important sources of the raw skins are China, South Africa, Aden, Argentina, Brazil, Mexico, Russia, Morocco and Turkey.

With reference to the world's production of raw goat

skins it may be stated that the supply is now not equal t the demand, and that it would consequently be advantag ous if the quantity produced in India could be increase

Unlike the case of raw kips, it is clear that India ha no monopoly of the supply of raw goat skins, and cons quently a proposal to impose an export duty on the India skins would require very careful consideration in view the competition of other producing countries. The Con mittee are agreed that the imposition of an export dut on the Indian skins could hardly be recommended unle it is considered possible to impose such a duty througho the British Empire. This larger question is, howeve beyond the purview of the Committee.

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As regards raw sheep skins the Indian export tra is very small, the maximum quantity and value in t six years 1910–11 to 1915–16 being only 33,067 cwt. a £173,999 respectively. In 1916–17, however, 45,314 cw of raw sheep skins were exported, valued at £324,96

Before the war about four-fifths by number of the sheep skins exported from India were in the tanned condition, and there would appear to be no reason why the entire exportable surplus should not be converted into leather in India. The Committee recommend that the Indian tanners should be encouraged to deal with the entire supply of these skins.

WYNDHAM R. DUNSTAN (*Chairman*).
A. YUSUF ALI.
W. E. COOPER.
H. PERCY DENSHAM.
CECIL GRAHAM.
W. L. INGLE.
HENRY LEDGARD.
CECIL J. LONGCROFT.
HAROLD BROWN (*Secretary*).

August 26th, 1918.

TABLE I

Exports of Raw Goat-skins from India

	1910–11.	1911–12.	1912–13.	1913–14.	1914–15	1915–16.	1916–17
Total exports { *Cwt.*	508,953	481,307	520,954	453,356	382,060	399,951	521,808
Total exports { Number.	20,829,912	20,362,934	21,716,896	19,690,958	16,409,829	19,618,894	27,866,563
,, value	£2,221,104	2,082,156	2,278,616	2,085,132	1,561,018	1,836,543	4,275,888
	Cwt.	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
To BRITISH COUNTRIES:							
United Kingdom	41,132	38,837	56,287	40,259	39,305	33,424	40,559
Canada	3,229	1,041	2,390	990	—	411	827
Australia	9,386	5,757	4,495	1,964	2,907	3,720	6,062
Other countries	7	297	—	39	116	812	14
Total	53,754	45,932	63,172	43,252	42,328	38,367	47,462
To ALLIED COUNTRIES:							
United States	390,361	379,214	381,266	342,452	300,676	353,997	452,151
Belgium	1,536	4,399	5,598	8,935	9,764	—	—
France	37,471	26,472	35,659	22,717	8,667	7,573	21,893
Other countries	85	57	70	69	—	14	302
Total	429,453	410,142	422,593	374,173	319,107	361,584	474,346
To ENEMY COUNTRIES:							
Germany	7,724	7,924	12,504	11,118	7,003	—	—
Austria-Hungary	607	535	1,295	1,262	56	—	—
Total	8,331	8,459	13,799	12,380	7,059		
To NEUTRAL COUNTRIES:							
Holland	17,405	16,624	21,390	23,551	13,547	—	—
Other countries	10	150	—	—	19	—	—
Total	17,415	16,774	21,390	23,551	13,566	—	—

TABLE II

Exports o Tanned Goat-skins from India

		1910–11.	1911–12.	1912–13.	1913–14	1914–15.	1915–16	1916–17.
Total exports	*Cwt.*	75,572	83,665	61,741	74,126	61,288	70,773	83,861
	Number.	8,380,804	9,253,034	6,996,694	8,575,249	7,407,944	8,402,764	10,416,825
" value		£1,066,732	1,168,938	871,905	1,073,767	882,965	986,999	1,697,796
To BRITISH COUNTRIES:		*Cwt*	*Cwt.*	*Cwt*	*Cwt*	*Cwt.*	*Cwt.*	*Cwt.*
United Kingdom		68,961	78,492	56,644	66,446	53,404	44,849	53,027
Australia		16	17	16	76	101	147	155
Other countries		16	15	32	5	9	34	29
Total		68,993	78,524	56,692	66,527	53,514	45,030	53,211
To ALLIED COUNTRIES:								
United States		3,199	2,837	2,641	5,846	6,913	25,682	30,073
Belgium		886	57	5	49	—	—	—
France		86	61	8	—	—	24	464
Japan		323	58	17	32	188	37	109
Total		4,494	3,013	2,671	5,927	7,101	25,743	30,646
To ENEMY COUNTRIES								
Germany		1,952	2,120	2,369	1,663	670	—	—
Austria-Hungary		15	—	—	—	—	—	—
Asiatic Turkey		15	—	—	—	—	—	—
Total		1,982	2,120	2,369	1,663	670		
To NEUTRAL COUNTRIES		103	8	9	9	3	—	4

TABLE III

Imports into the United Kingdom of Tanned Goat-skins

(Classed as Leather, undressed)

		1913	1914	1915	1916.	1917
Total imports .	. *Cwt.*	77,287	73,148	67,214	84,758	36,5
,, value .	. £	958,841	953,840	819,543	1,414,739	886,75
FROM BRITISH COUNTRIES		*Cwt.*	*Cwt*	*Cwt*	*Cwt.*	*Cwt*
British India .	.	62,935	60,302	56,501	78,781	Detai not avai able
British West Africa	.	12,588	9,959	8,715	5,726	
Other countries .	.	38	197	770	175	
Total .	.	75,561	70,458	65,986	84,682	
FROM FOREIGN COUNTRIES :						
Turkey (including Crete) .		1,085	2,073	34	3	
Other countries .	.	641	617	1,194	73	
Total .	.	1,726	2,690	1,228	76	

TABLE IV

Re-exports from the United Kingdom of Tanned Goat-skins

(Classed as Leather, undressed)

		1913	1914	1915	1916	1917
Total re-exports	. *Cwt.*	65,342	57,544	39,434	70,344	27,01
,, value	. £	912,548	756,554	511,286	1,300,216	776,18
		Cwt	*Cwt*	*Cwt.*	*Cwt.*	*Cwt*
TO BRITISH COUNTRIES	.	100	10	38	337	
TO ALLIED COUNTRIES						
United States .	.	21,874	25,375	31,424	57,216	Detail not avail able
France . .	.	6,436	4,157	7,198	11,879	
Total . .	.	28,310	29,532	38,622	69,095	
TO ENEMY COUNTRIES .						
Germany . .	.	27,150	19,229	—	—	
Austria-Hungary .	.	5,062	4,235	—	—	
Total .	.	32,212	23,464			
TO NEUTRAL COUNTRIES .						
Netherlands .	.	2,668	2,340	—	—	
Other countries [1]	.	2,052	2,198	774	912	
Total . .	.	4,720	4,538	774	912	

[1] *"Other Foreign Countries" in the United Kingdom Trade Returns*

United Kingdom Trade in Tanned Goat-skins

Balance of Imports and Re-exports

		1913 *Cwt*	1914 *Cwt*	1915 *Cwt*	1916 *Cwt*	1917 *Cwt*
Total imports	. .	77,287	73,148	67,214	84,758	36,58
,, re-exports	. .	65,342	57,544	39,434	70,344	27,01
Balance	. .	11,945	15,604	27,780	14,414	9,57.

TABLE V

Imports of Raw Goat-skins into the United Kingdom

	1911.	1912.	1913.	1914.	1915.	1916.	1917.
Total imports . . Number.	11,760,670	12,292,244	12,094,788	10,417,961	12,810,438	11,362,797	9,015,834
,, value	£1,356,867	1,422,759	1,488,893	1,169,381	1,125,130	1,315,603	1,788,039
FROM BRITISH COUNTRIES .	Number.	Number.	Number.	Number	Number.	Number.	Details not available
British India . .	4,530,634	5,499,192	5,933,071	3,648,301	4,988,277	5,926,264	
Aden and Dependencies . .	706,354	1,032,599	842,069	388,802	2,692,855	1,360,196	
South Africa . .	2,454,070	2,561,694	2,832,260	2,475,763	2,638,346	1,706,060	
British East Africa . .	352,615	653,842	182,414	178,351	500,190	672,738	
British West Africa	154,170	84,609	197,984	1,555,660	391,546	525,544	
Egypt	417,044	215,401	57,129	137,012	228,754	225,579	
Other countries . . .	40,161	8,447	60,939	33,464	41,135	38,286	
Total	8,655,048	10,055,784	10,105,866	8,417,353	11,481,103	10,454,667	
FROM ALLIED COUNTRIES							
United States . .	500,868	75,572	119,547	140,457	41,688	2,565	
Russia . .	207,022	460,451	528,337	334,415	—	—	
France (including Algeria) .	469,486	386,307	130,541	289,953	18,460	15,728	
Other countries . . .	42,145	37,883	19,724	24,182	—	18,276	
Total	1,219,521	960,213	798,149	789,007	60,148	36,569	
FROM ENEMY COUNTRIES							
Germany	278,304	234,440	189,115	140,998	—	—	
Austria-Hungary . . .	28,850	47,181	18,680	22,372	—	—	
Turkey, European . . .	36,060	8,490	13,310	51,580	—	—	
Turkey, Asiatic . . .	97,063	63,725	73,524	71,658	—	—	
Total	440,277	353,836	294,629	286,608			
FROM NEUTRAL COUNTRIES							
Morocco	702,743	530,189	396,539	542,157	572,944	186,025	
China	486,856	138,361	292,877	111,248	96,882	18,434	
Brazil	89,998	50,461	12,958	67,330	113,050	126,000	
Spain	9,044	212	8,216	974	279,109	3,384	
Other countries . . .	157,183	203,188	185,554	203,284	207,202	537,718	
Total . . .	1,445,824	922,411	896,144	924,993	1,269,187	871,561	

TABLE VI

Re-exports of Raw Goat-skins from the United Kingdom

	1911.	1912.	1913.	1914.	1915.	1916.	1917.
Total re-exports . Number.	7,623,270	8,638,310	8,493,072	6,647,337	8,524,242	8,728,214	3,806,560
,, value	£864,599	984,708	1,019,611	766,343	787,417	984,203	723,335
To BRITISH COUNTRIES	Number.	Number.	Number.	Number.	Number.	Number.	
Canada	89,410	113,170	21,331	53,591	24,418	28,080	Details not available
Other countries . . .	34,476	2,465	10,897	2,611	13,800	3,550	
Total	123,886	115,635	32,228	56,202	38,218	31,630	
To ALLIED COUNTRIES .							
United States . . .	6,388,940	6,949,809	6,536,972	5,071,513	8,344,104	7,843,254	
France	170,042	330,460	294,683	532,070	100,544	847,230	
Belgium	94,256	13,556	74,450	89,461	—	—	
Total	6,653,238	7,293,825	6,906,105	5,693,044	8,444,648	8,690,484	
To ENEMY COUNTRIES .							
Germany	598,245	930,291	1,121,994	594,591	—	—	
To NEUTRAL COUNTRIES							
Holland. . . .	237,340	272,740	417,917	273,513	—	—	
Other countries . . .	10,561	25,819	14,828	29,987	41,376	6,100	
Total	247,901	298,559	432,745	303,500	41,376	6,100	

United Kingdom Trade in Raw Goat-skins

Balance of Imports and Re-exports

	1911	1912	1913.	1914	1915.	1916.	1917
Total imports	11,760,670	12,292,244	12,094,788	10,417,961	12,810,438	11,362,797	9,015,834
,, re-exports . . .	7,623,270	8,638,310	8,493,072	6,647,337	8,524,242	8,728,214	3,806,560
Balance . . .	4,137,400	3,653,934	3,601,716	3,770,624	4,286,196	2,634,583	5,209,274

TABLE VII

Exports of Raw Sheep-skins from India

	1910–11.	1911–12.	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.
Total exports . . { cwt.	23,496	28,330	31,668	33,067	26,295	32,517	45,314
{ Number	1,700,634	2,083,307	2,297,499	2,373,122	1,956,986	2,245,075	2,932,858
,, value	£95,987	126,821	155,285	173,999	132,355	154,438	324,968
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
To British Countries							
United Kingdom . . .	172	642	1,081	1,599	326	340	60
Hong Kong	322	146	37	81	120	378	611
Other countries . . .	13	6	9	259	23	236	11
Total	507	794	1,127	1,939	469	954	682
To Allied Countries							
United States . . .	16,744	23,200	28,986	28,818	24,682	31,404	43,884
Belgium	—	269	—	15	—	—	—
France	1,287	3	283	85	18	—	—
Italy	378	54	49	120	120	141	54
Japan	—	16	25	—	18	18	694
Total	18,409	23,542	29,343	29,038	24,838	31,563	44,632
To Enemy Countries							
Germany	4,234	2,523	714	1,676	751	—	—
Austria-Hungary . .	8	20	26	123	147	—	—
Total	4,242	2,543	740	1,799	898		
To Neutral Countries							
Holland	338	1,392	458	291	75	—	—
Spain	—	33	—	—	15	—	—
Other countries . . .	—	26	—	—	—	—	—
Total	338	1,451	458	291	90		

TABLE VIII

Exports of Tanned Sheep-skins from India

		1910–11.	1911–12.	1912–13.	1913–14.	1914–15	1915–16.	1916–17.
Total exports	cwt.	62,792	62,081	60,355	49,652	45,978	49,345	67,792
	Number	9,422,400	9,635,879	9,701,682	8,119,205	7,512,804	8,219,040	11,441,061
" value		£785,100	785,715	776,893	639,000	588,965	658,478	1,443,081
To British Countries		Cwt	Cwt.	Cwt.	Cwt.	Cwt	Cwt.	Cwt.
United Kingdom		40,395	38,306	34,944	29,202	29,180	31,553	43,161
Straits Settlements		3,520	2,580	2,469	1,718	1,766	1,771	1,738
Ceylon		253	224	224	284	190	148	119
Other countries		204	296	88	227	66	239	128
Total		44,372	41,406	37,725	31,431	31,202	33,711	45,146
To Allied Countries								
United States		9,936	11,647	13,382	10,365	6,209	9,770	16,066
Japan		7,450	8,732	9,129	7,459	8,424	5,803	6,428
Belgium		828	102	9	193	—	—	—
France		31	—	—	—	—	—	83
Other countries		—	—	—	—	—	14	50
Total		18,245	20,481	22,520	18,017	14,633	15,587	22,627
To Enemy Countries								
Germany		—	60	11	117	48	—	—
Austria-Hungary		23	—	—	—	—	—	—
Total		23	60	11	117	48		
To Neutral Countries								
Siam		74	94	70	87	91	31	19
Holland		66	38	14	—	—	—	—
Other countries		12	2	15	—	4	16	—
Total		152	134	99	87	95	47	19

TABLE IX

Imports of Tanned Sheep-skins into the United Kingdom

(Classed as Leather, undressed)

	1913.	1914.	1915	1916	1917
Total imports . cwt.	88,646	74,652	90,316	72,164	47,870
,, value . . .	£819,076	724,599	851,173	1,020,759	1,149,641
FROM BRITISH COUNTRIES:	Cwt	Cwt.	Cwt	Cwt.	Cwt
British India . . .	39,253	28,764	32,946	45,186	Details not available
Australia . . .	30,217	24,918	38,269	17,467	
Egypt	1,779	5,347	6,248	3,134	
New Zealand . .	2,799	1,482	2,558	175	
Other British possessions	6	43	240	367	
Total . . .	74,054	60,554	80,261	66,329	
FROM					
France	6,638	6,702	7,285	3,194	
Turkey, Asiatic . .	6,167	4,487	98	140	
Spain.	435	791	1,625	2,216	
Other foreign countries	1,352	2,118	1,047	285	
Total . . .	14,592	14,098	10,055	5,835	

TABLE X

Re-exports of Tanned Sheep-skins from the United Kingdom

(Classed as Leather, undressed)

	1913	1914.	1915	1916	1917
Total re-exports. . cwt	49,938	29,087	9,994	35,501	14,158
,, value . . .	£523,881	334,317	136,615	655,583	447,445
	Cwt.	Cwt.	Cwt	Cwt	Cwt
TO BRITISH COUNTRIES .	389	54	177	251	Details not available
To United States of America	14,138	10,650	9,380	34,591	
,, Germany . . .	18,669	10,454	—	—	
,, Austria-Hungary . .	9,569	3,449	—	—	
,, Holland	4,656	3,281	92	—	
,, other foreign countries .	2,517	1,199	345	659	
TOTAL FOREIGN COUNTRIES.	49,549	29,033	9,817	35,250	

United Kingdom Trade in Tanned Sheep-skins

Balance of Imports and Re-exports

	1913 Cwt	1914 Cwt	1915 Cwt	1916. Cwt	1917 Cwt
Total imports	88,646	74,652	90,316	72,164	47,870
,, re-exports . . .	49,938	29,087	9,994	35,501	14,158
Balance . . .	38,708	45,565	80,322	36,663	33,712

TABLE XI

Imports of Raw Goat-skins into the United States. I. *Dry*

		1910–11	1911–12.	1912–13.	1913–14.	1914–15.	1915–16
TOTAL	pieces	36,462,598	38,524,098	38,678,502	35,354,741	29,797,323	51,957,766
„	lb.	64,337,587	69,143,153	70,562,896	63,374,054	50,713,062	85,505,514
From		Pieces	Pieces.	Pieces.	Pieces.	Pieces.	Pieces.
Europe		5,376,871	9,688,616	9,103,274	7,461,951	4,568,843	6,664,990
North America		3,776,179	3,615,456	3,698,241	3,191,949	3,282,951	3,310,821
South America		5,032,878	7,008,318	5,351,992	5,632,164	6,045,854	11,108,142
Asia		19,724,623	16,549,394	19,001,325	17,311,048	14,965,021	27,736,471
Oceania		—	1,200	19,669	13,141	3,166	2,000
Africa		2,552,047	1,661,114	1,504,001	1,744,488	931,488	3,135,342
From :							
British Empire		16,308,135	16,117,977	16,307,563	15,884,921	12,899,516	22,971,664
United Kingdom		2,232,264	3,039,442	2,473,387	2,399,940	1,917,522	3,161,061
British West Indies		215,182	253,504	218,803	217,941	182,361	169,038
Aden		2,804,131	2,749,314	2,583,101	2,801,699	1,644,275	3,476,308
India		9,297,455	8,659,560	9,706,878	9,016,710	8,281,366	13,926,149
South Africa		225,626	271,534	387,530	447,071	122,458	1,155,987
East Africa		1,503,853	1,010,558	785,045	969,289	618,444	94,170
Egypt		28,012	230	68,978	11,070	91,095	264,733
Other countries		1,612	133,835	83,841	21,201	41,995	724,218

The principal countries that supply the United States with dry goat-skins are . India, China, Aden, British East Africa, Brazil, Mexico, Argentina, Venezuela, United Kingdom, France, and Russia.

Imports of Raw Goat-skins into the United States. 2 *Green or Pickled*

		1910–11	1911–12.	1912–13.	1913–14.	1914–15.	1915–16
TOTAL	pieces	6,143,547	6,623,397	7,041,631	5,813,304	4,929,438	5,226,338
„	lb.	22,576,255	26,197,550	25,687,409	21,385,374	15,834,101	15,151,507
From							
Europe		166,863	124,315	114,853	126,853	216,487	117,942
North America		5,640	7	543	717	1,312	2,867

South America	6,103	200	—	—	—	3,025
Asia	5,964,941	6,498,875	6,925,515	5,685,734	4,711,639	5,050,074
Oceania	—	—	720	—	—	—
Africa	—	—	—	—	—	52,430
From						
British Empire	6,129,791	6,523,109	6,990,916	5,746,947	4,862,114	5,208,764
United Kingdom	163,350	41,078	76,980	66,258	150,177	117,942
Aden	—	—	—	37,207	21,300	15,700
India	5,964,941	6,482,024	6,913,015	5,643,452	4,690,339	5,022,652
Canada	1,500	7	201	30	298	40
Australia	—	—	720	—	—	—
South Africa	—	—	—	—	—	52,430

India is the principal source of supply of the goat-skins, green or pickled, imported into the United States

Summary

Imports of Raw Goat-skins into the United States

Dry	36,462,598	38,524,098	38,677,502	35,354,741	29,797,323	51,957,766
Green or pickled	6,143,547	6,623,397	7,041,631	5,813,304	4,929,438	5,226,338
Total	42,606,145	45,147,495	45,719,133	41,168,045	34,726,761	57,184,104
From India:						
Dry	9,297,455	8,659,560	9,706,878	9,016,710	8,281,366	13,926,149
Green or pickled	5,964,941	6,482,024	6,913,015	5,643,452	4,690,339	5,022,652
Total from India	15,262,396	15,141,584	16,619,893	14,660,162	12,971,705	18,948,801

TABLE XII

Imports of Raw Sheep-skins into the United States 1. Dry

		1910–11.	1911–12	1912–13.	1913–14.	1914–15	1915–16
TOTAL	pieces	8,814,610	11,804,999	14,071,108	12,968,187	8,558,194	23,544,868
,,	lb	18,787,098	25,644,846	31,132,037	29,338,146	20,886,018	54,599,884
From		Pieces	Pieces	Pieces.	Pieces.	Pieces	Pieces.
Europe		5,115,506	6,677,395	8,312,038	6,623,209	3,163,591	7,387,267
North America		93,612	83,863	117,724	97,062	177,507	102,980
South America		860,290	972,564	923,869	1,120,706	1,561,641	7,599,397
Asia		1,963,889	3,027,329	3,560,148	3,154,895	2,499,294	4,508,973
Oceania		215,936	132,960	144,817	1,138,906	728,380	988,668
Africa		565,377	910,888	1,012,512	833,409	427,781	2,957,583
From							
British Empire		4,489,084	5,540,734	6,747,405	6,379,436	5,374,631	10,718,527
United Kingdom		2,106,861	2,108,400	2,715,740	1,813,958	2,099,689	2,866,595
British India		1,084,121	1,866,800	2,119,968	2,200,470	1,588,186	2,690,957
Aden		445,400	395,582	609,746	358,324	484,807	1,221,331
South Africa		308,653	584,409	618,578	552,973	267,869	2,794,652
East Africa		150,079	153,848	199,411	96,632	59,035	—
Egypt		106,081	172,631	192,040	172,934	99,407	101,345
New Zealand		212,934	90,084	107,058	978,926	21,982	147,007
Australia		3,002	42,876	37,759	159,980	706,398	841,661
Canada		37,840	12,484	53,708	12,822	19,882	14,826
British West Indies		34,113	32,380	36,297	32,417	27,376	21,079
Other countries		—	81,240	57,100	—	—	19,074

The principal countries that supply the United States with sheep-skins, dry, are the United Kingdom, Russia, France, India, South Africa, Brazil, and Argentina

Imports of Raw Sheep-skins into the United States. 2 Green or Pickled

TOTAL	pieces	16,583,781	16,198,198	16,857,608	16,889,782	14,644,447	19,878,135
,,	lb	36,929 941	34,755,463	40,652,682	40,738,679	37,833,520	46,859,397
From							
Europe		12,137,963	11,811,404	11,865,784	11,602,994	7,993,561	11,917,329
North America		336,441	510,372	490,406	903,792	994,254	1,006,149

South America	1,469,382	1,433,217	1,760,318	1,285,903	2,238,294	1,518,317
Asia	43,637	22,841	21,300	59,604	53,052	209,368
Oceania	2,596,358	2,420,364	2,719,800	3,036,073	3,365,286	5,226,972
Africa	—	—	—	1,416	—	—
From						
British Empire	14,386,511	13,997,400	14,236,032	14,770,217	12,122,776	17,905,398
United Kingdom	11,424,075	11,046,347	11,005,576	10,773,518	7,766,586	11,559,737
Canada	336,441	507,848	489,356	903,350	974,578	1,005,974
British India	29,637	22,841	21,300	55,860	6,212	112,715
Australia	978,980	654,210	550,733	610,317	1,207,665	1,781,282
New Zealand	1,617,378	1,766,154	2,169,067	2,425,756	2,157,621	3,445,690
Other countries	—	—	—	1,416	10,114	—

The principal countries that supply the United States with sheep-skins, green or pickled, are the United Kingdom, New Zealand, Australia, Canada, and Argentina

Summary

Imports of Raw Sheep-skins into the United States

Dry	8,814,610	11,804,999	14,071,108	12,968,187	8,558,194	23,544,868
Green or pickled	16,583,781	16,198,198	16,857,608	16,889,782	14,644,447	19,878,135
Total	25,398,391	28,003,197	30,928,716	29,857,969	23,202,641	43,423,003
From India.						
Dry	1,084,121	1,866,800	2,119,968	2,200,470	1,588,186	2,690,957
Green or pickled	29,637	22,841	21,300	55,860	6,212	112,715
Total from India	1,113,758	1,889,641	2,141,268	2,256,330	1,594,398	2,803,672

TABLE XIII

The World's Exportable Surplus of Raw Goat-skins

No statistics of the world's total production of goat-skins are available, but the following table gives the exports of raw goat-skins from the principal producing countries in the years 1912 and 1913. The figures represent the domestic exports wherever these are stated in the returns.

In a number of the exporting countries goat-skins are not shown separately in the trade statistics, but are included in one or other of the following categories : " Goat- and Sheep-skins," " Skins," or " Hides and Skins." In these cases it is not possible to give definite figures for goat-skins alone. The table is accordingly divided into two parts, viz. (1) the countries which make separate returns for raw goat-skins, and (2) those which classify goat-skins with other skins or with hides.

For the purpose of the present investigation it will probably be sufficiently accurate to assume that in the case of those countries which do not show goat-skins separately in their returns, one-half of the exports in the above-mentioned categories consist of goat-skins. On this assumption the world's exportable surplus of raw goat-skins would be approximately 163,000,000 lb. in 1912 and 160,000,000 lb. in 1913. Of these totals India contributed about 58,000,000 lb. in 1912 and 52,500,000 lb. in 1915 (exclusive of her exports of tanned goat-skins), and the British Empire as a whole about 76,000,000 lb. in 1912 and 71,500,000 lb. in 1913.

Exports of Raw Goat-skins from the Principal Producing Countries

I. COUNTRIES WHICH RETURN GOAT-SKINS SEPARATELY :

	1912	1913
Total exports of Raw Goat-skins (classed as such)	134,272,000 lb	131,479,000 lb
From British Empire :	Thousands of lb	Thousands of lb
India [1]	57,961	52,437
Aden and Dependencies	6,494	5,975
Africa, British South	8,126	9,105
Africa, British East	621	757
Uganda	1,163	1,148
From British Empire	74,365	69,422

[1] *In addition India exported* 7,111,000 *lb of tanned goat-skins in* 1912, *and* 7,816,000 *lb. in* 1913.

From Foreign Countries:	1912 Thousands of lb	1913. Thousands of lb.
Argentina	5,082	4,387
Brazil	5,158	5,062
Mexico	5,624	4,641
Venezuela	3,439	1,606
Peru	822	872
Chili	132	not available
China	18,362	22,176
Austria-Hungary	2,160	2,014
Germany	2,884	2,912
France	4,215	5,411
Italy	954	1,191
Spain	1,801	1,923
Turkey [1]	4,749	4,657
Morocco	3,850	4,380
Algeria	675	825
From Foreign Countries	59,907	62,057

II. COUNTRIES WHICH GROUP GOAT-SKINS WITH OTHER SKINS OR HIDES

From British Empire.	1912 Total number of skins	1913 Total number of skins.
Egypt (sheep and goat)	742,215	841,594
Sudan (sheep and goat)	400,557	371,458
Somaliland Protectorate (skins) [2]	—	—
Nigeria (hides and skins)	316,188	473,330
Gold Coast (sheep and goat)	8,673	14,620
Malta (hides and skins	569,000 lb	717,000 lb

From Foreign Countries	Total weight Thousands of lb	Total weight Thousands of lb.
Russia (sheep and goat)	26,752	23,471
Switzerland (skins)	7,174	8,178
Sweden (goat, kid, sheep, lamb)	908	845
Abyssinia (hides and skins, exported by rail)	6,853	9,031
Java (skins)	12,394	12,620
Persia (skins, raw and tanned) [3]	—	—

[1] *Imports from Turkey into the United Kingdom, United States, Austria-Hungary, and Germany only*

[2] *Values only available, £152,847 in 1912 and £128,877 in 1913.*

[3] *Values only available, £215,350 in 1911–12 and £230,495 in 1912–13*

VI

THE TRADE IN INDIAN HIDES AND SKINS

SUMMARY OF GENERAL INFORMATION PREPARED AT THE IMPERIAL INSTITUTE FOR THE COMMITTEE

HIDES and skins, raw and tanned, form one of the largest groups of exports from India. In the last year of normal trade, 1913–14, they figured in the returns of the sea-borne trade of British India to the extent of 1,900,000 cwt. valued at £10,600,000, the only groups which exceeded them in value being textile materials and manufactures, cereals, and oil seeds. The chief constituents of this trade in hides and skins are cow-hides, the exports of which, raw and tanned, were valued in 1913–14 at nearly £5,000,000, goat-skins (over £3,000,000), and buffalo-hides (over £1,500,000). Cow-hides, buffalo-hides and goat-skins together accounted in 1913-14 for over 90 per cent. of the total both by weight and by value, the balance consisting principally of sheep-skins (£800,000) and calf-skins.

Most of the hides and skins exported from India before the war found a market in countries outside the British Empire. In the year 1913–14, for which the returns are fairly typical of pre-war conditions in this branch of trade, the exports of hides and skins, raw and tanned, from India to British countries, formed 20 per cent. of the whole by weight, and were consigned principally to the United Kingdom (19 per cent). The exports to the United States were 28 per cent., and to all Allied countries 38 per cent., while the exports to Germany were 21 per cent. and to all enemy countries 36 per cent. By value the position of the inter-Empire trade in Indian hides and skins was a little more favourable, the proportion exported to British countries being 27 per cent. of the

whole (26 per cent. to the United Kingdom). This difference between the percentage distribution of the trade by weight and by value has an important significance. It is due to the fact that the exports to British countries comprised nearly all the tanned or dressed hides (98·5 per cent.), and the great bulk of the tanned or dressed skins (80 per cent.), but only a small portion of the raw hides (5 per cent.) and raw skins (9 per cent.). The major part (59 per cent.) of the raw hides was exported to enemy countries (Germany 35 per cent, Austria-Hungary 21 per cent.), while about three-fourths (76 per cent.) of the raw skins were exported to the United States. The tanned and dressed hides and skins are classed in the Indian trade returns as leather, and though this leather is not a finished product, the tanning being only partial, especially in the case of hides, a higher value naturally attaches to the manufactured or partially manufactured article than to the raw product. In 1913–14 tanned hides and skins formed by weight (304,621 cwt.) only 16 per cent. of the total exports of hides and skins from India, but by value (£2,817,166) they formed 27 per cent. of the total. To sum up, the United Kingdom before the war controlled the trade in tanned hides and skins from India, but had little share in the trade in raw hides and skins, which was much the more important of the two, both in quantity and in total value.

The trade with enemy countries before the war was mainly in raw Indian cow-hides (kips). These were by far the largest item in the exports of hides and skins from India. In 1913–14 the exports of raw kips amounted to nearly 750,000 cwt. valued at nearly £4,000,000, or nearly two-fifths, both by weight and by value, of the total exports of hides and skins, raw and tanned. Over two-thirds of these kips went to enemy countries, principally Germany and Austria-Hungary. The war has directed particular attention to this trade, and that not merely because of the difficulty of finding new buyers for the large quantities of kips suddenly shut off from their regular market. When converted into finished leather, kips are very suitable for use in making the uppers of stout boots, and they have been largely employed

in Germany and Austria in the manufacture of army boots. At one time they were largely exported to the United Kingdom, but in the last two or three decades before the war the trade had passed into German hands. In India itself the merchant side of the business was controlled by German or quasi-German firms, who constituted a strong "ring." Ways and means of recapturing this trade, not only during the war but after the war, have been under careful consideration by an influential Committee of the Imperial Institute, including representatives of British tanners and of Indian firms interested in the subject. A report was submitted by the Committee to the Secretary of State for India in March 1917. Important questions connected with the future development of other branches of the Indian trade in hides and skins have also been under consideration by this Committee.

The following article brings together statistical and other data relating to the subject in all its main branches. As a preliminary, an attempt is made to estimate the livestock resources of India, on which the supplies of hides and skins depend. The conditions and distribution of the trade are then discussed in detail, in relation both to the position existing before the war and developments during the war. One of the most notable features in this last connection is the development of the tanning industry in India. As already pointed out, in 1913–14 tanned hides and skins formed 16 per cent. of the total exports of hides and skins by weight, and 27 per cent. by value. In 1917–18 they formed 32 per cent. by weight and 45 per cent. by value. In view of the marked differences between the British and foreign purchases of tanned and raw hides and skins before the war, it is obvious that the development of the tanning industry in India may have an important bearing on the future course of the trade.

Livestock Resources of India

British India.—Statistics of the livestock in British India are based mainly on provincial censuses. In some provinces livestock censuses are taken annually, in others

only once in five years, and then not in the same year in all cases, though efforts are being made to secure greater uniformity in this respect. Meanwhile such totals as are available combine the returns for different years, and obviously no useful comparisons can be drawn from year to year. In Bengal no livestock census was taken till 1912–13, and then it covered only cattle and buffaloes. The latest figures for British India are given in *Agricultural Statistics*, 1916–17 (Calcutta, 1918; No. 583). The following table summarises the livestock returns:

Province.	Bulls and Cows	Buffalo Bulls and Cows.	Calves and Buffalo Calves	Sheep	Goats.	Horses, Mules, Donkeys, Camels
Bengal (1912–13)	15,998,100	942,656	8,383,168	—	—	—
Madras (1914–15)	12,130,209	3,751,386	5,878,807	10,765,543	7,426,828	188,623
Bombay (1915–16)	5,158,708	1,304,761	2,742,641	1,699,196	2,338,478	211,971
Sind (1915–16) .	1,324,493	289,016	565,468	514,463	1,101,487	318,906
United Provinces (1914–15) .	17,467,254	4,670,486	9,603,089	2,794,605	9,881,611	845,617
Bihar and Orissa (1913–14) .	12,338,528	2,280,703	5,479,237	1,168,709	5,372,656	203,127
Punjab (1913–14)	8,258,150	3,189,683	4,041,250	4,676,899	4,431,837	1,472,015
Burma (1916–17)	3,801,142	856,597	1,641,292	38,777	198,303	110,686
Central Provinces (1916–17) .	5,884,995	1,119,072	2,719,650	268,752	980,974	140,193
Berar (1916–17)	1,375,788	265,887	528,890	137,128	369,545	48,437
Assam (1914–15)	2,142,476	347,320	1,086,380	11,650	509,742	15,004
N.W. Frontier Prov. (1913–14)	795,087	175,015	300,958	604,004	543,308	211,176
Ajmer-Merwara (1916–17) .	202,020	44,400	52,002	234,094	184,570	9,895
Delhi (1914–15)	70,755	21,863	55,013	9,504	22,129	12,944
Coorg (1914–15)	81,200	19,677	33,147	110	3,929	291
Manipur (1916–17)	4,150	1,225	1,226	24	995	109
Total .	87,033,055	19,279,747	43,112,218	22,923,458	33,366,392	3,788,994

Of the total of 87,000,000 cattle shown in the preceding table, the greater part, 49,400,000 (57 per cent.), were bulls and bullocks, and 37,600,000 (43 per cent.) were cows. On the other hand, of the 19,300,000 buffaloes, only 5,600,000 (29 per cent.) were bulls, while 13,700,000 (71 per cent.) were cows.[1] The numbers of calves and buffalo calves are not given separately in *Agricultural Statistics of India*. If it may be assumed

[1] Buffalo bulls are apt to be dangerous, and Sir George Watt in his *Commercial Products of India* (Murray, 1908), notes on p 736 that they are not often reared, but are either purposely starved or killed

that they are in proportion to the numbers of full-grown cattle and buffaloes, then the total of 43,100,000 calves and buffalo calves would comprise about 35,300,000 calves and 7,800,000 buffalo calves. On this basis the total number of cattle in British India would be over 122,000,000 and of buffaloes over 27,000,000.

The chief cattle provinces are the United Provinces (20 per cent. of the full-grown animals), Bengal (18 per cent.), Bihar and Orissa (14 per cent.), Madras (14 per cent.), and the Punjab (9 per cent.), these five provinces containing three-fourths of the total. The chief buffalo provinces are the United Provinces (24 per cent,), Madras (19 per cent.), Punjab (17 per cent.), and Bihar and Orissa (12 per cent.), these four provinces containing nearly three-fourths of the whole. Bengal, which is the second largest cattle province, comes seventh in the list of provinces arranged according to numbers of buffaloes.

No figures are available as to the numbers of the smaller classes of livestock in Bengal. Among the other provinces of British India, Madras easily leads in respect of sheep, containing nearly half the recorded total. With those of Madras, the flocks of the Punjab and the United Provinces form nearly four-fifths of the total. In respect of goats, as of cattle and buffaloes, the United Provinces take first place with nearly one-third (30 per cent.) of the recorded total, while Madras, Bihar and Orissa, and the Punjab together account for more than half the total.

The 3,789,000 horses, mules, donkeys and camels consist mostly of horses and ponies (1,681,000) and donkeys (1,537,000). There are 500,000 camels, and 71,000 mules. Of the horses and ponies, well over half are found in the United Provinces (515,697), and the Punjab (427,515). In the same provinces are found nearly two-thirds of the donkeys, and nearly three-fourths of the mules. The Punjab alone has over three-fifths of the camels, most of the remainder being found in Sind and the N.W. Frontier Province.

Native States.—Livestock returns are made by eighteen Native States, with a total area of 165,000 sq. miles (about one-sixth of British India), and a population of 20,000,000 (about one-twelfth of that of British India).

The number of livestock recorded in these States (22·7 millions) is about one-tenth of the number in British India (209·5 millions, exclusive of sheep, goats, etc., in Bengal). The following table gives the latest figures for the reporting States, as recorded in *Agricultural Statistics of India*, 1914–15, vol. ii.

State (1914–15).	Bulls and Cows.	Buffalo Bulls and Cows	Calves and Buffalo Calves	Sheep.	Goats.	Horses, Mules, Donkeys, Camels.
Mysore	3,213,212	564,249	1,238,368	2,738,199	1,762,036	79,778
Central India:						
Gwalior	1,777,816	394,756	1,124,101	202,948	533,165	101,558
Indore	622,370	139,465	233,010	42,142	167,615	25,814
Bhopal	446,161	114,348	9,131	14,634	18,899	22,149
Rajputana.						
Bikaner	199,243	26,821	90,048	664,590	104,840	38,954
Marwar	209,305	27,784	109,905	477,061	272,866	15,787
Jaipur	265,165	80,291	92,960	203,967	249,869	23,027
Alwar	283,800	85,726	161,573	253,704 [2]		22,590
Bharatpur	202,332	85,033	148,455	41,682	125,426	23,564
Tonk	170,405	35,173	66,710	35,019	46,299	9,818
Kotah	420,471	92,746	259,756	40,098	205,351	25,925
Others [1]	500,741	129,643	253,725	227,479 [3]		21,052
Total	8,311,021	1,776,026	3,787,742	8,427,889 [4]		410,016

[1] *Seven—namely, Rajgarh, Narsingarh, Barwani and Nagod in Central India, Kishangarh and Jhalawar in Rajputana, and Cochin.*

[2] *About* 200,000 *goats* [3] *About* 144,000 *goats*

[4] *About* 4,597,000 *sheep and* 3,831,000 *goats.*

The total in the last column is composed of 180,445 horses and ponies, over one-third of which are in Gwalior; 171,391 mules and donkeys, of which over one-third are in Mysore; and 58,180 camels, of which 35,000 are in Bikaner.

There is not much difference between the recorded numbers of bulls and bullocks (4,002,000) on the one hand and of cows (4,309,000) on the other; but the excess of buffalo cows (1,528,500) over buffalo bulls (247,500) is very marked, the proportion being six to one. If the numbers of calves and buffalo calves are in the same proportion as the numbers of the adult animals in their respective classes, the young stock would comprise about 3,121,000 calves and 667,000 buffalo calves. On this basis the total number of cattle in the reporting

Native States would be 11,432,000 and the total number of buffaloes 2,443,000.

Estimated Totals.—The reporting Native States comprise 21 per cent. of the total area of the Native States in India, and 27·5 per cent. of the total population. If the remaining States carried livestock on the same scale in proportion to area, the number of cattle in the Native States as a whole would be in round figures 54,500,000, the number of buffaloes 11,500,000, the number of sheep 22,000,000, the number of goats 18,250,000, the number of horses and ponies 850,000, and the number of mules and donkeys 800,000. On this basis the total numbers of the livestock in India as a whole (exclusive of sheep, goats, etc., in Bengal) would be: cattle, 177,000,000; buffaloes, 39,000,000; sheep, 45,000,000; goats, 52,000,000; horses and ponies, 2,500,000; mules and donkeys, 2,400,000.

Obviously there is room for a considerable margin of error in these estimated totals. As the non-reporting Native States are more sparsely populated than the reporting States, it may be that the former do not carry all classes of livestock on the same scale, in relation to area, as the latter. Proportionately, cattle may be fewer and sheep and goats more numerous, owing to the larger areas for grazing by flocks. In any case it is probable that the returns supplied by the reporting States are incomplete. In the crop-reporting Native States, which are much more numerous than the States which furnish livestock returns, statistics are available for less than half the total area. It is not stated in *Agricultural Statistics of India* what, if any, is the degree of incompleteness in the livestock returns from reporting Native States. The omissions, however, may easily balance any over-estimation in the above totals. For example, an independent estimate of the number of sheep in India puts the total at between 50,000,000 and 55,000,000. If this be correct, the figure given above (45,000,000 outside of Bengal) is under rather than over the mark.

In the next table the calculated totals for India are shown, with the official returns for other leading countries. These official returns, like the official returns for India,

are probably incomplete in some cases; but two things stand out clearly—that India has the largest number of livestock, and that British and Allied countries largely control the world's supply.

Country.	Millions of							
	Cattle	Bufla-loes.	Sheep	Goats	Horses.	Mules and Donkeys.	Pigs.	Total.
India	177·0	39·0	45 0	52·0	2·5	2·4	—	318
Australia (1916)	10·0	—	72·9	—	2·4	—	0·9	86
S African Union (1911)	5·8	—	33·5 [1]	11·8 [1]	0·7	0·4	1·1	53
New Zealand (1917)	2·6	—	25·3	—	0·4	—	0 3	29
Canada (1917)	7·9	—	2·4	—	3·4	—	3·6	17
United Kingdom (1917)	12·3	—	27·8	—	1·9 [2]	—	3·0	45
United States (1918) [3]	66·8	—	48·9	—	21·6	4·8 [4]	71·4	213
Russian Empire (1914)	52·1	—	72·3	—	35·0	—	15 0	174
Brazil (1916)	29 0		7·2	6·9	6 1	3 2	17 3	70
Uruguay (1908)	8·2 [5]	—	26·3	—	0 6	—	0 2	35
France (1917) [6]	12 4	—	10 6	—	2 3	0·5	4·2	30
Italy (1914)	6 6		13 8		2·2		2 7	25
Argentina (1914)	25·9	—	43·2 [7]	4·3	8·3	0·8	2·9	85
Spain (1916)	3·1	—	16·0	3·2	0·5	1·8	2·8	27
Germany (1915)	20 3 [8]	—	5·1 [8]	3·4	3·3 [9]	—	17·3 [8]	49
Austria-Hungary [10]	17 8		12·4	3 1	4·3	0·7	14·9	53

[1] *At the end of* 1916 *the number of sheep in the Union of South Africa was returned as* 31,980,705 *and the number of goats as* 8,961,696.

[2] *Horses for agriculture, mares for breeding, and unbroken horses.*

[3] *Farm animals In addition, at the census of* 1910, *animals not on farms numbered over* 7,000,000, *nearly half of them horses* [4] *Mules.*

[5] *In* 1916 *the number of cattle in Uruguay was returned as* 7,800,000.

[6] *Farm animals Exclusive of invaded area*

[7] *Census returns At the previous census* (1908) *the number of sheep in Argentina was returned as* 67,384,000, *and at the end of* 1913 *an official estimate put the number at* 81,485,000

[8] *In* 1917 *the number of cattle in Germany was returned as* 21,462,071, *of sheep as* 6,167,469, *and of swine as* 2,763,610. [9] *Exclusive of army horses*

[10] *Returns for years ranging from* 1910 *to* 1913 *for different parts of the Austro-Hungarian Empire*

Numbers are not the only criterion of importance. The economic value of the livestock in India is limited by the small size of the animals, and the aversion of the Hindus to taking life. The hides are not only light in weight, but are mostly taken from old and worn animals which have died a natural death. These and other fundamental considerations are opposed to the development of the livestock industry in India along the lines pursued by other countries. A certain amount of im-

provement in the stock is being effected by the efforts of the Veterinary Department, and, apart from this, it may be possible even under present conditions to remedy some of the worst defects in the preparation of the hides and skins for export. The subject is dealt with more fully in subsequent sections, under the heads of the several branches of the export trade. First, however, a brief survey may be taken of the import trade.

Imports of Hides and Skins into India

Though not commensurate with the exports, the imports of hides and skins into India amount to a considerable total. Including the imports across the land frontier, they attained in 1913–14 to a value of £635,000.

Sea-borne Trade.—Imports by sea provided less than one-third of the value of the total imports in 1913–14, (£203,556). The sea-borne trade had been increasing in value for some years before the war, and though there was a falling-off in 1914–15 (£144,859) and 1915–16 (£180,484), the pre-war value was exceeded both in 1916–17 (£246,281), and in 1917–18 (£254,273). In quantity the imports in the four war years were respectively 27,462 cwt., 32,692 cwt., 43,816 cwt. and 35,351 cwt. Prior to the war they amounted to between 30,000 cwt. and 40,000 cwt. annually, with a tendency to increase. In the five years 1909–10 to 1913–14, the average annual imports were 34,414 cwt. The value of these imports before the war was divided almost equally between raw hides and skins (£101,066 in 1913–14) and tanned hides and skins (£102,490 in 1913–14). It follows that the bulk of the trade by weight was in raw hides and skins; these provided imports to the amount of 32,906 cwt. in 1913–14, compared with imports of tanned hides and skins to the amount of 4,776 cwt., the total imports for the year being 37,682 cwt.

The greater part of the imports of raw hides and skins is drawn from countries in the British Empire (chiefly Aden, Ceylon, and the Straits Settlements), with Persia as the chief source of supply among foreign countries. The imports of tanned hides and skins are received

almost exclusively from British countries, chiefly the United Kingdom. The great bulk of the raw imports, as regards both weight and value, consists of skins. The weight of the tanned imports is more evenly divided between hides and skins, though here again the skins predominate in value. In 1913–14 the figures were as follows :

Sea-borne Imports of Hides and Skins into India in 1913–14

Imports.	Quantity.			Value.
	British.	Foreign.	Total.	
	Cwt	Cwt	Cwt.	£
Raw hides	2,146	1,875	4,021	10,935
Raw skins	15,754	13,131	28,885	90,131
Total Raw . . .	17,900	15,006	32,906	101,066
Tanned hides . . .	2,164	54	2,218	24,078
Tanned skins . . .	2,256	302	2,558	78,412
Total Tanned . .	4,420	356	4,776	102,490
Total Raw and Tanned .	22,320	15,362	37,682	203,556

There were no re-exports of raw hides and skins in 1913–14, and the re-exports of tanned hides and skins amounted to only 8 cwt.

Transfrontier Trade.—In the Indian transfrontier trade in hides and skins the relation between imports and exports is the reverse of that which obtains in the sea-borne trade. By sea, the imports are only a small fraction (less than 2 per cent.) of the exports, whereas by land the exports are a small fraction of the imports. As previously stated, the exports by sea, with a pre-war value of over £10,000,000 sterling, are the outstanding factor in the total trade in hides and skins ; but imports by land in 1913–14 formed a substantial item, valued at £431,980. At some of the Customs stations along the frontier quantities are reported by weight, and at others by numbers of hides and skins. In 1913–14 the imports recorded by weight amounted to 87,657 cwt., and those recorded by number to 528,158. By far the greater part of the total, both in quantity and in value, consists of hides ; they furnished over 80 per cent. of the total value in 1913–14.

Both in 1914–15 and again in 1915–16 the trans-frontier trade in hides declined considerably, but showed little further alteration in 1916–17. The transfrontier imports of skins, during the first three years of the war, were well maintained. The specification of the imports in the land trade returns is a little different from that in the returns of sea-borne trade. Imports by land are described as "Hides of Cattle" and "Skins of Sheep, Goats, and Small Animals," without its being definitely stated that they are raw hides and skins. There is no separate category under the heading "Leather"—as in the sea-borne trade returns—for tanned hides and skins, and if any imports of this description are included in the category "Unmanufactured Leather" they must be very small, the total imports so described in 1913–14 amounting in value to only £200.

In the returns of the "Trade by Land of British India with Foreign Countries" are included the imports from and the exports to a number of border States and territories within the international frontier of India, such as the Shan States (Burma), Swat and Waziristan (N.W. Frontier Province), Las Bela and Kalat (Baluchistan), and Sikkim. Some of this trade consists of goods in transit from remoter countries. In the report on the trans-frontier trade of Burma, for example, it is stated that this is the case in regard to the Shan States, etc. At present Customs stations are established only on the Indian border of these States; eventually it is hoped to establish stations on the outer or international border. Meanwhile it is impossible to give precise returns of the trade of British India with foreign countries only, as distinct from Indian Native States. The existing returns give the closest approximation possible under present conditions. With regard to the imports of hides, the chief source of supply is Nepal (nearly 40 per cent. of the total value in 1913–14). In the same year Dir, Swat, and Bajaur, on the Afghan border, were credited with supplying nearly 21 per cent of the total value, the Shan States 18 per cent., and Western China nearly 11 per cent. In other words, these four sources supplied 90 per cent. of the value of the hides imported into India by land in

the latest year of normal trade. Of the skins imported by land, nearly 30 per cent. by value were received from Nepal, and over 50 per cent. from Afghanistan and bordering territories in the North-West Frontier Province.

Analysis of Export Trade

The exports of hides and skins from India by land are comparatively small (value £15,256 in 1913–14), and need not be considered in detail. This and following sections are concerned with the exports by sea.

The contributions made by the different classes of livestock to the Indian export trade in hides and skins are not equally related to their numbers. The number of grown cattle (cows and bulls) in India may be estimated from the data given in the section of this article relating to Livestock Resources at about 127,000,000. The number of raw and tanned cow-hides exported in 1912–13 was 13,214,430, and in 1913–14 it was 10,974,375; that is, the number of cow-hides exported before the war was from 8 to 10 per cent. of the estimated number of grown cattle in India. Similarly the total number of buffalo cows and bulls may be estimated at about 28,000,000, and before the war raw and tanned buffalo hides were exported to the extent of about 8 per cent. of this total—2,223,797 hides being exported in 1912–13 and 2,217,622 in 1913–14. Very much larger proportions of goat-skins and sheep-skins are exported. As already estimated, there are about 52,000,000 goats in India. The number of goat-skins exported annually before the war was as high as 55 per cent. of this total, amounting to 28,713,590 skins in 1912–13 and 28,266,207 skins in 1913–14. Of sheep it has been estimated that there are about 45,000,000; and about 25 per cent. of this number of sheep-skins were exported—11,999,181 in 1912–13, and 10,492,327 in 1913–14.

Altogether, between 50,000,000 and 60,000,000 hides and skins are exported annually from India under normal trade conditions. Of these nearly two-thirds are raw, and the rest tanned. About half the total number are goat-skins, while most of the remainder are divided fairly

evenly, as regards number, between cow-hides and sheep-skins. In 1916–17 the total number of hides and skins exported was nearly 67,000,000.

Weights and values afford a better basis than numbers for testing the relative importance of the different classes of hides and skins exported from India. The following table gives the returns for five years :

Exports of Hides and Skins in Cwt.

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.
RAW HIDES :					
Cow . .	831,200	743,037	480,513	689,113	581,645
Buffalo . .	345,037	345,864	211,745	162,887	261,099
Calf . .	29,640	26,116	21,158	29,761	50,933
Other . .	3,172	730	510	124	351
Total quantity cwt	1,209,049	1,115,747	713,926	881,885	894,028
,, value . .	£5,372,407	5,530,638	3,500,693	4,523,590	4,994,675
RAW SKINS .					
Goat . .	520,954	453,356	382,060	399,951	521,808
Sheep . .	31,668	33,067	26,295	32,517	45,134
Other . .	2,649	140	93	229	104
Total quantity cwt	555,271	486,563	408,448	432,697	567,046
,, value . .	£2,447,576	2,260,244	1,695,583	1,995,184	4,603,416
TANNED HIDES ·					
Cow . .	215,429	158,383	191,565	247,380	286,210
Buffalo . .	17,004	15,545	25,261	24,234	32,178
Other . .	830	100	194	388	4,002
Total quantity cwt	233,263	174,028	217,020	272,002	322,390
,, value . .	£1,363,278	1,058,575	1,606,649	2,041,582	2,980,821
TANNED SKINS					
Goat . .	61,741	74,126	61,288	70,773	83,861
Sheep . .	60,355	49,652	45,978	49,345	66,254
Other . .	8,311	6,815	10,139	7,204	12,804
Total quantity cwt	130,407	130,593	117,405	127,322	162,919
,, value . .	£1,705,055	1,758,591	1,552,269	1,699,177	3,231,056
HIDES AND SKINS					
Raw . cwt	1,764,320	1,602,310	1,122,374	1,314,582	1,461,074
Tanned . ,,	363,670	304,621	334,425	399,324	485,309
Total . . ,,	2,127,990	1,906,931	1,456,799	1,713,906	1,946,383
RAW AND TANNED					
Hides . cwt	1,442,312	1,289,775	930,946	1,153,887	1,216,418
Skins . ,,	685,678	617,156	525,853	560,019	729,965
Total quantity cwt.	2,127,990	1,906,931	1,456,799	1,713,906	1,946,383
,, value . .	£10,888,316	10,608,048	8,355,194	10,259,533	15,809,968

During the period covered by the above table, about two-thirds of the raw hides by weight consisted of cow-hides in each year except 1915–16, when the proportion jumped up to 78 per cent. All but 2 or 3 per cent. of the remaining raw hides consisted of buffalo-hides in each year except 1916–17, when calf-skins formed 6 per cent. of the total. The percentage value of the raw cow-hides was a few units higher than their percentage weight.

Of the raw skins, goat-skins formed in each year from 92 to 94 per cent. of the total, and sheep-skins practically the whole of the remainder. The percentage values were about the same as the percentage weights.

Of the tanned hides, cow-hides formed from 88 to 92 per cent. of the total and buffalo-hides practically the whole of the remainder. The percentage value of the cow-hides was slightly higher than the percentage weight.

Of the tanned skins, goat-skins formed from 47 to 57 per cent. of the total, and sheep-skins from 38 to 46 per cent., leaving from 5 to 9 per cent. for "other kinds." The percentage value of the goat-skins (51 to 61 per cent.) was higher than their percentage weight.

The changes produced by the war assumed a more radical character in the year 1917–18. In the United Kingdom a proclamation dated February 23rd, 1917, prohibited as from that date the importation, except under licence, of numerous classes of goods, including wet and dry hides and dressed and undressed leather. In India the Government stopped the issue of licences for the export of cow-hides to the United Kingdom on private account. The tanning of goat- and sheep-skins in the Madras and Bombay Presidencies was also prohibited (May 1917), so as to concentrate effort on the tanning of hides for War Office requirements, and to conserve for that purpose the supplies of suitable tanning bark. As a result, the exports of tanned cow-hides from India in 1917–18 increased to 342,806 cwt., while the exports of tanned goat-skins and tanned sheep-skins dropped sharply to 15,303 cwt. and 15,895 cwt. respectively.

The exports of raw cow-hides likewise declined to 317,588 cwt., so that for the first time the exports of tanned kips exceeded the weight of the raw kips exported. Raw buffalo hides dropped to 84,900 cwt. The exports of raw goat-skins were less affected, amounting to 392,034 cwt. The total exports of hides and skins were 1,245,923 cwt., valued at £9,450,067—the lowest quantity, but not the lowest value, recorded during the war. The total was composed of 846,931 cwt. of raw hides and skins, and 398,992 cwt. of tanned hides and skins; or, otherwise grouped, 779,577 cwt. of raw and tanned hides, and 466,346 cwt. of raw and tanned skins. The significance of these figures, in relation to those of earlier years, will be apparent from the following tables of percentages.

The percentage relation of hides and skins by weight in the export trade is shown in the following table:

Percentage Exports, Hides and Skins, by Weight

	1912–13.	1913–14.	1914–15.	1915–16	1916–17.	1917–18.
Raw hides	69	70	64	67	61	49
,, skins	31	30	36	33	39	51
	100	100	100	100	100	100
Tanned hides . .	64	57	65	68	66	91
,, skins . .	36	43	35	32	34	9
	100	100	100	100	100	100
Total hides	68	68	64	67	62·5	63
,, skins	32	32	36	33	37·5	37
	100	100	100	100	100	100

The proportion of hides to skins is usually about the same in the raw and in the tanned exports, and consequently in the total export trade. The weight of hides exported is about twice the weight of skins, and this proportion was not greatly affected in the case of the totals even in 1917–18, when the decrease in the percentage weight of raw hides was counterbalanced by the increase in the percentage weight of tanned hides. It is instructive to contrast with the above the percentage relation of hides and skins by value:

Percentage Exports, Hides and Skins, by Value

	1912–13	1913–14	1914–15.	1915–16.	1916–17.	1917–18.
Raw hides . .	69	71	67	69	52	39
,, skins . .	31	29	33	31	48	61
	100	100	100	100	100	100
Tanned hides .	44	38	51	55	48	77
,, skins .	56	62	49	45	52	23
	100	100	100	100	100	100
Total hides . .	62	62	61	64	50·4	56
,, skins . .	38	38	39	36	49 6	44
	100	100	100	100	100	100

The percentage values were not much different from the percentage weights in the case of raw hides and skins, except in 1916–17 and 1917–18, when the percentage value of raw skins was considerably greater than their percentage weight. In other words, raw hides and raw skins, as valued for export purposes, are normally about the same price per cwt., but in 1916–17 and 1917–18 raw skins fetched a much higher price than raw hides. On the other hand, the percentage value of the tanned skins was much higher than their percentage weight in each of the six years covered by the table ; so much so that while the tanned skins usually amounted, in weight, to little more than half the tanned hides, their value was greater than that of the tanned hides in three years out of the six. Analysis of the percentage relation between the raw and tanned exports is also instructive :

Percentage Exports, Raw and Tanned Products, by Weight

	1912–13	1913–14.	1914–15.	1915–16	1916–17.	1917–18.
Raw hides . .	84	86 5	77	76	73·5	54
Tanned hides .	16	13 5	23	24	26 5	46
	100	100	100	100	100	100
Raw skins . .	81	79	78	77	78	92
Tanned skins .	19	21	22	23	22	8
	100	100	100	100	100	100
Total, Raw . .	83	84	77	77	75	68
,, Tanned .	17	16	23	23	25	32
	100	100	100	100	100	100

Before the war tanned hides constituted, by weight, about one-sixth or one-seventh of the total hides exported, and tanned skins about one-fifth of the total skins exported. In the five years, 1912–13 to 1916–17, the proportion of tanned skins among the skins exported did not greatly increase (from 19 to 22 per cent.), and in 1917–18 it dropped to 8 per cent., owing to the Government restrictions already noted. Among the hides, on the other hand, the proportion of the tanned hides increased during the six years from 16 to 46 per cent., the rise being especially marked in 1917–18, due to the Government measures to promote the output of tanned kips. Among hides and skins combined, the tanned goods increased during the period covered by the table from 17 to 32 per cent. of the total. Except in 1916–17, the actual exports of tanned hides and skins as a whole were not greatly in excess of the pre-war figures and the percentage increase has been chiefly due to the decline in the exports of raw hides and skins, more particularly raw hides. This decline is directly due to the war, and from the standpoint of Indian industry the question is whether after the war the exports of raw hides will expand again at the expense of trade in the tanned product.

The following table shows the percentage values of the raw and tanned exports :

Percentage Exports, Raw and Tanned Products, by Value

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.	1917–18.
Raw hides	80	84	69	69	63	39
Tanned hides	20	16	31	31	37	61
	100	100	100	100	100	100
Raw skins	59	56	52	54	59	76
Tanned skins	41	44	48	46	41	24
	100	100	100	100	100	100
Total, Raw	72	73	62	64	61	55
„ Tanned	28	27	38	36	39	45
	100	100	100	100	100	100

Among the exports of hides, the percentage value of the tanned products, like the percentage weight, has increased considerably during the war. The percentage

value of the tanned hides, naturally, is greater than the percentage weight, and has tended to increase more rapidly; in 1912–13 the percentage value was one-fourth greater than the percentage weight, while in 1917-18 it was one-third greater. On the other hand the percentage value of the tanned skins, though showing little increase or decrease till the abnormal drop in 1917–18, was about double the percentage weight of the tanned skins till the last-named year, when it was three times as great. After allowance has been made for abnormal conditions of supply and demand, it remains generally true that tanning in India increases the value of skins by weight very much more, relatively, than it does the value of hides. The explanation is not so much that the skins are tanned more completely than the hides, but, as will be seen later, that they lose relatively more in weight—at any rate as compared with kips. The increase in value per skin, as a result of tanning, is much more commensurate with the increase in value per hide than might be thought from a comparison of their respective increases in value by weight.

To recapitulate: By weight, in the normal course of trade, the exports of raw hides consist almost entirely of cow-hides and buffalo-hides, in the proportion of two to one; of the tanned hides exported, nine-tenths are cow-hides. Over nine-tenths of the raw skins exported are goat-skins, which also provide between half and three-fifths of the tanned skins exported; the remainder of both the raw and the tanned skins are chiefly sheep-skins. The weight of hides exported from India is about twice the weight of skins, as regards both raw and tanned products. Raw hides before the war were about the same price per cwt. as raw skins, but tanned skins fetched much higher prices per cwt. than tanned hides, with the result that the proportion of the total exports of hides to the total exports of skins by value was little more than three to two. In 1916–17 the two classes of exports were about equal in value, and in 1917–18 the proportion was about five to four. The weight of raw hides exported before the war was 5 or 6 times the weight of tanned hides; and the weight

of raw skins about four times the weight of tanned skins. Among the exports of skins the proportion was not greatly affected by the war till 1917–18, when it rose to about eleven to one; as regards hides, on the contrary, the proportion was steadily reduced till in 1917–18 the exports of raw hides were to the exports of tanned hides as about six to five, the weight of the tanned kips being actually greater than that of the raw kips.

So far the exports of hides and skins from India have been considered in their group relations. The following table shows, for the latest year of normal trade, the importance of the principal kinds of hides and skins exported, considered in relation to the whole:

Exports of Hides and Skins in 1913–14

	Quantity.		Value.	
	Cwt.	Per cent.	£	Per cent.
COW-HIDES				
Raw	743,037	39·0	3,937,007	37·1
Tanned	158,383	8·3	982,654	9·3
Total	901,420	47·3	4,919,661	46·4
BUFFALO-HIDES				
Raw	345,864	18·1	1,469,113	13·8
Tanned	15,545	0·8	75,127	0·7
Total	361,409	18·9	1,544,240	14·5
GOAT-SKINS				
Raw	453,356	23·8	2,085,132	19·7
Tanned	74,126	3·9	1,073,767	10·1
Total	527,482	27·7	3,158,899	29·8
SHEEP-SKINS				
Raw	33,067	1·7	173,999	1·7
Tanned	49,652	2·6	639,000	6·0
Total	82,719	4·3	812,999	7·7
OTHER HIDES AND SKINS				
Raw [1]	26,986	1·4	125,631	1·2
Tanned [2]	6,915	0·4	46,618	0·4
Total	33,901	1·8	172,249	1·6
TOTAL HIDES AND SKINS	1,906,931	100·0	10,608,048	100·0
Hides, raw	1,115,747	58·5	5,530,638	52·1
Hides, tanned	174,028	9·1	1,058,575	10·0
Skins, raw	486,563	25·5	2,260,244	21·3
Skins, tanned	130,593	6·9	1,758,591	16·6
Total hides and skins	1,906,931	100·0	10,608,048	100·0

[1] *Chiefly hides (calf-skins).* [2] *Chiefly skins.*

The great bulk of the trade consisted of cow-hides, buffalo-hides and goat-skins, which together constituted 94 per cent. of the total by weight and 91 per cent. by value. Cow-hides alone furnished nearly half the total both by weight and by value; goat-skins over one-fourth, and buffalo-hides nearly one-fifth by weight (one-seventh by value). Of the cow-hides over one-sixth were tanned, and of the goat-skins one-seventh, but of the buffalo-hides only about 4 per cent.

The relatively small contribution which sheep-skins make to the total is noteworthy, seeing that the estimated number of sheep in India is not greatly different from the number of goats. The numbers are roughly in the proportion of nine sheep to ten goats, but the exports of sheep-skins are only about one-sixth of the exports of goat-skins by weight. This statement is true not only for 1913–14, but for each of the five years ending 1916–17. During that period the proportion showed a slight tendency to increase, but in 1917–18 it dropped to one-eighth. The disparity is partly due to the fact that the average sheep-skin exported is of lighter weight than the average goat-skin; but, even on the basis of numbers, between two and three times as many goat-skins as sheep-skins are annually exported from India. The position occupied by sheep-skins is further noteworthy in that, ordinarily, well over half the exports of this class of skins are tanned, whereas among the exports of cow-hides, buffalo-hides, calf-skins, and goat-skins, the raw product greatly preponderates in every case.

A small addition to the trade is furnished by cuttings of raw hides and skins, which in 1913–14 were exported to the amount of 29,488 cwt., valued at £24,394. Of these cuttings 90 per cent. were despatched from Bengal. The great bulk of them went to the United States. During the war the trade in cuttings has declined, the exports in 1917–18 amounting to only 5,661 cwt., valued at £4,488.

The distribution of the exports by groups and as a whole is shown in the following tables. The italicised figures bracketed with the chief items denote percentages.

Exports of Raw Hides

	1912–13.	1913–14.	1914–15.	1915–16	1916–17.
Total quantity *cwt.*	1,209,049	1,115,747	713,926	881,885	894,028
„ value .	£5,372,407	5,530,638	3,500,693	4,523,590	4,994,675
To British Countries	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
United Kingdom	83,799 *6·9*	42,365 *3·8*	132,322 *18·5*	99,290 *11·3*	145,140 *16·2*
Canada . .	5,302	9,021	2,261	11,079	12,848
Others [1] . .	5,367	5,805	1,114	5,656	4,470
Total . .	94,468 *7·8*	57,191 *5·1*	135,697 *19·0*	116,025 *13·2*	162,458 *18·2*
To Allied Countries					
United States .	228,281 *18·9*	155,372 *13·9*	189,173 *26·5*	312,965 *35·5*	461,167 *51·6*
Italy . .	133,164 *11·0*	106,805 *9·6*	72,199 *10·1*	383,360 *43·5*	172,871 *19·3*
France . .	25,584 —	17,885 —	8,619 —	21,924 —	37,562 *4·2*
Belgium . .	21,417	21,888	6,852	—	—
Others [2] . .	3,793	3,503	4,722	614	4,105
Total . .	412,239 *34·1*	305,453 *27·4*	281,565 *39·5*	718,863 *81·5*	675,705 *75·6*
To Enemy Countries					
Germany .	389,429 *32·2*	388,409 *34·8*	146,575 *20·5*	— —	— —
Austria-Hungary	173,772 *14·4*	237,829 *21·3*	60,143 *8·4*	— —	— —
Turkey . .	24,609	33,095	10,849	—	—
Bulgaria .	5,649	2,663	4,690	—	—
Total . .	593,459 *49·1*	661,996 *59·3*	222,257 *31·1*	— —	— —
To Neutral Countries					
Spain . .	65,946 *5·5*	49,375 *4·4*	47,011 *6·6*	29,552 *3·4*	41,317 *4·6*
Holland . .	42,624 *3·5*	41,564 *3·7*	5,518 *0·8*	— —	— —
Sweden . .	—	—	19,526	6,564	—
Norway . .	125	83	2,243	10,353	13,861
Others . .	188	85	109	528	687
Total . .	108,883 *9·0*	91,107 *8·2*	74,407 *10·4*	46,997 *5·3*	55,865 *6·2*

[1] *Chiefly Ceylon and Straits Settlements.* [2] *Chiefly Rumania and Greece.*

The total exports of raw hides in 1917–18 amounted to 417,903 cwt., valued at £2,057,092. No returns of the distribution of the trade in hides and skins in that year are available for publication.

There has been a considerable increase in the exports of raw hides to the United Kingdom during the war.

Germany and Austria-Hungary were the chief customers before the war, and were followed by the United States and Italy. During the war the last two countries have absorbed some of the supplies which would have gone normally to enemy countries, but the loss of enemy markets has been attended by a heavy falling off in the total exports, due in part to the shortage of shipping and the restrictions on trade.

Before the war nearly 80 per cent. of the exports of raw hides were shipped from Bengal ports, the remainder being despatched almost entirely from the ports of Sind (9 per cent.) and Burma (10 per cent.). In 1916–17 the share of Bengal had dropped to 63 per cent., and that of the Sind ports had risen to 21 per cent., while 7 per cent. were shipped from Bombay ports; the share of Burma remaining fairly normal at 9 per cent. In 1917–18, however, Bengal's share was up again to 73 per cent., that of Sind being 10 per cent., of Bombay 6 per cent., and of Burma 10 per cent.

Exports of Raw Skins

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.
Total quantity *cwt*	555,271	486,563	408,448	432,697	567,046
,, value .	£2,447,576	2,260,244	1,695,583	1,995,184	4,603,416
To British Countries	*Cwt.*	*Cwt*	*Cwt.*	*Cwt.*	*Cwt.*
United Kingdom	57,598 / *10 4*	41,993 / *8 6*	39,722 / *9·7*	33,993 / *7·9*	40,719 / *7·2*
Others [1] . .	6,937	3,389	3,168	5,557	7,526
Total . .	64,535 / *11·6*	45,382 / *9·3*	42,890 / *10 5*	39,550 / *9 1*	48,245 / *8·5*
To Allied Countries					
United States .	411,415 / *74 1*	371,270 / *76 3*	325,358 / *79 7*	385,401 / *89·1*	495,855 / *87 4*
France . .	35,944 / *6·5*	22,802 / *4·7*	8,685 / *2·1*	7,573 / *1 75*	21,893 / *3·9*
Others [2] . .	6,186	9,088	9,902	173	1,053
Total . .	453,545 / *81·7*	403,160 / *82·9*	343,945 / *84 2*	393,147 / *90 9*	518,801 / *91·5*
To Enemy Countries					
Total [3] .	14,954 / *2·7*	14,179 / *2 9*	7,957 / *2·0*	—	—
To Neutral Countries					
Total [4] .	22,237 / *4 0*	23,842 / *4·9*	13,656 / *3 3*	—	—

[1] *Chiefly Australia.* [2] *Chiefly Belgium, up to and including* 1914–15.
[3] *Chiefly Germany.* [4] *Chiefly Holland*

In 1917–18 the total exports of raw skins amounted to 429,028 cwt., valued at £3,163,716.

The British share of the trade in raw skins, as in raw hides, is small, though the United Kingdom is the largest buyer after the United States. The latter country is the dominating power in this branch of Indian trade, taking three-fourths of the exports before the war and nearly nine-tenths both in 1915–16 and in 1916–17.

The shipping of skins is more evenly divided among the provinces of India than the shipping of hides, but shows the same war tendency, namely the declining importance of Bengal ports, and the transference of trade to the ports of Bombay and Sind, up to and including 1916–17, with partial recovery on the part of Bengal in 1917–18. In 1916–17 the shipments of raw skins from Bengal ports were 26 per cent. against 43 per cent. in 1913–14; from Bombay ports they were 35 per cent. against 28 per cent.; and from Sind ports, 34 per cent. against 23 per cent. In 1917–18 the percentages were: Bengal, 35; Bombay, 33; Sind, 25. The rest (5 or 6 per cent.) of the raw skins are despatched almost entirely from Madras ports.

Exports of Tanned Hides

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17
Total quantity *cwt.*	233,263	174,028	217,020	272,002	322,390
„ value	£1,363,278	1,058,575	1,606,649	2,041,582	2,980,821
TO BRITISH COUNTRIES	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
United Kingdom	229,075 / 98 2	169,687 / 97·5	214,115 / 98·7	270,648 / 99·5	321,121 / 99·6
Others	3,145	1,646	784	1,354	1,250
Total	232,220 / 99 5	171,333 / 98·5	214,899 / 99·0	272,002 / 100	322,371 / 100
TO FOREIGN COUNTRIES	1,043	2,695	2,121	—	19

In 1917–18 the total exports of tanned hides were 361,674 cwt., valued at £3,246,588.

Tanned hides were exported exclusively to British countries in 1915–16, and all but so in 1916–17, the great bulk going to the United Kingdom. The position was little different before the war, only 0·5 per cent. of the total being exported to foreign countries in 1912–13, and

1·5 per cent. in 1913–14. Normally, four-fifths of the total are despatched from Madras ports, and practically all the remainder from Bombay ports.

Exports of Tanned Skins

	1912–13	1913–14.	1914–15.	1915–16.	1916–17.
Total quantity *cwt*	130,407	130,593	117,405	127,322	162,919
„ value .	£1,705,055	1,758,591	1,552,269	1,699,177	3,231,056
To British Countries :	*Cwt.*	*Cwt.*	*Cwt*	*Cwt.*	*Cwt.*
United Kingdom	99,879 *76·6*	102,442 *78·4*	92,698 *79·0*	83,575 *65·6*	107,451 *66·0*
Straits Settlements	2,490	1,719	1,766	1,775	1,746
Others . .	350	606	378	594	426
Total . .	102,719 *78·8*	104,767 *80·2*	94,842 *80·8*	85,944 *67·5*	109,623 *67·3*
To Allied Countries					
United States	16,032 *12·3*	16,211 *12·4*	13,135 *11·2*	35,452 *27·8*	46,139 *28·3*
Japan . .	9,146 *7·0*	7,491 *5·7*	8,612 *7·3*	5,840 *4·6*	6,537 *4·0*
Others [1] . . .	92	329	91	65	616
Total . .	25,270 *19·4*	24,031 *18·4*	21,838 *18·6*	41,357 *32·5*	53,292 *32·7*
To Germany .	2,380 *1·8*	1,785 *1·4*	718 *0·6*	—	—
To other Foreign Countries [2] .	38	10	7	21	4

[1] *France, Belgium, Siam.*
[2] *Holland, Sumatra, and other foreign countries not specified.*

The total exports of tanned skins in 1917–18 amounted to only 37,318 cwt., valued at £982,671.

Tanned skins are not exported to British countries to the same extent as tanned hides; but before the war the United Kingdom received over three-fourths of the total exports of tanned skins, and British countries as a whole about four-fifths of the total. Most of the remainder went to the United States and Japan, the more important customer being the United States. In 1915–16 and 1916–17 the British proportion of the trade declined to about two-thirds, though the actual exports to British countries in 1916–17 were larger than in any other year of the quinquennium. The percentage decline of the British trade was due to the large increase in the exports of tanned skins to foreign countries, the dominating factor being

the exports to the United States, which increased from 16,000 cwt. in 1913–14 to 46,000 cwt. in 1916–17. As in the case of tanned hides, most of the trade in tanned skins is done from Madras, over four-fifths of the exports being despatched ordinarily from the ports of that presidency, and the rest mainly from Bombay ports.

The following table shows the distribution of the total exports of hides and skins in 1913–14:

Exports of Hides and Skins, Raw and Tanned, in 1913–14

	Quantity		Value.	
	Cwt.	*Per cent.*	£	*Per cent.*
To British Countries:				
United Kingdom	356,487	18 7	2,749,734	25·9
Other British countries	22,186	1 2	122,307	1·2
Total	378,673	19·9	2,872,041	27·1
To Allied Countries:				
U.S.A.	542,853	28·5	2,569,047	24·2
Italy	106,943	5·6	564,260	5·3
Other countries	81,983	4·3	441,402	4·2
Total	731,779	38·4	3,574,709	33·7
To Enemy Countries:				
Germany	402,988	21·1	2,151,887	20·3
Austria-Hungary	239,214	12·5	1,241,469	11·7
Other countries	35,758	1·9	95,531	0·9
Total	677,960	35·5	3,488,887	32·9
To other Foreign Countries:	118,519	6·2	672,411	6·3
British	378,673	19·9	2,872,041	27·1
Allied	731,779	38·4	3,574,709	33·7
Enemy	677,960	35·5	3,488,887	22·9
Neutral	118,519	6·2	672,411	6·3
Total	1,906,931	100	10,608,048	100·0

Both Allied and enemy countries were much larger buyers of Indian hides and skins of all kinds before the war than were British countries. The largest individual share of the trade, however, in respect of value, was that taken by the United Kingdom (over one-fourth), though in respect of quantity both the United States (over one-fourth) and Germany (over one-fifth) were ahead of the United Kingdom (under one-fifth). The next largest buyer, Austria-Hungary, had about one-eighth of the trade. Between them these four countries took about four-fifths of the total exports, both by quantity and by value.

These comparisons do not take account of the re-export trade of the receiving countries. In the case of the United Kingdom, the re-export trade is of large dimensions, as the following returns show :

Trade of the United Kingdom in Indian Hides and Skins

	1912.	1913.	1914	1915.	1916.
		Raw Hides			
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Gross Imports .	148,212	100,019	92,033	160,491	141,004
Net Imports . .	81,819	48,131	56,667	84,545	74,948
		Undressed Goat-skins.			
	Number.	Number.	Number.	Number.	Number.
Gross Imports .	5,499,192	5,933,071	3,648,301	4,988,277	5,926,264
Net Imports . .	1,217,481	1,149,836	710,055	1,437,680	511,662
		Other Undressed Skins.			
	£	£	£	£	£
Gross Imports .	15,997	36,575	32,664	30,798	90,352
Net Imports . .	7,052	7,796	10,132	6,678	11,247
		Leather (mostly Rough-tanned Hides and Skins)			
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Gross Imports .	344,507	309,527	272,724	371,339	401,056
Net Imports . .	261,832	220,290	206,806	326,145	304,938

Of the raw hides imported into the United Kingdom from India before the war, about one-half were retained ; of the raw goat-skins, about one-fifth ; of the other raw skins—a comparatively small item—nearly half in 1912 and a fifth in 1913 ; of the tanned hides and skins, about three-fourths. During the war, up to and including 1916, the proportion retained was subject to little alteration in the case of either raw hides or leather, but fluctuated considerably in the case of raw skins (see p. 111).

Indian Tanning Industry

Before dealing with the chief kinds of hides and skins separately, it will be useful to state the present position with regard to a question which affects the trade in all of them—the development of the tanning industry in India.

Factory Statistics.—In the factory statistics of India a distinction is drawn between tanneries and leather works. Both are tabulated under " Processes connected with skins and hides," and most if not all of the leather

works appear to comprise tanneries. A certain amount of tanning is done by individuals in almost every town and village in India, but factories of any considerable size devoted to this industry are not numerous. In the *Commercial Products of India* (Murray, 1908), Sir George Watt says that in 1902–3 there were 202 tanneries with 6,200 employees; and of these tanneries 183 were small concerns, located in the Madras Presidency and engaged chiefly in the dressing of skins. The statistics now issued relate mainly to factories employing 50 persons or more. The returns distinguish not only between tanneries and leather works, but between those worked by mechanical or electrical power and those not so worked. In each category the number of employees as well as the number of works is given. During the decade ending 1915 (the latest year for which returns are available, the total number of works engaged in processes connected with hides and skins, including an occasional entry under "miscellaneous," increased in every year but one, and advanced from 19 in 1906 to 40 in 1915. The total number of employees fluctuated considerably, and was slightly less in 1915 (6,787) than in 1906 (6,930); in the interval it fell to a minimum in 1909 (5,862) and reached a maximum in 1914 (10,397). In each year the number of tanneries (16 to 28) was considerably in excess of the number of leather works (3 to 13), but the latter employed the larger number of persons prior to 1912, when tanneries claimed 6,175 employees against 2,488 employees in leather works. Tanneries continued to employ the larger number of persons both in 1913 and in 1914; but in 1915 leather works again took the lead, with 4,262 employees against 2,397 in tanneries. This preponderance of employees in leather works is due to the outstanding position of the Cawnpore works, run by mechanical power, which in 1915 had 3,649 employees (2,938 in Messrs. Cooper, Allen & Co.'s Army Boot and Equipment Factory), or over 53 per cent. of the total published number of employees in private leather works and tanneries throughout India. When account is further taken of the employees in other leather works run by mechanical power, as well as in tan-

neries run by power, a very large proportion of the total number of employees is found to be absorbed by establishments of this description. In 1915 as many as 5,722 persons out of a total of 6,787 were employed in power works, and though the proportion was not always so large, in no year during the decade was it less than two-thirds. The number of establishments worked by power increased from 7 in 1906 to 17 in 1912, dropped to 14 in the following year, rose to 23 in 1914, and dropped again to 18 in 1915. The number of establishments not worked by mechanical or electrical power ranged during the decade between 16 and 22, and constituted a majority in each year except 1914. In other words, up to 1915, non-power establishments for the tanning and working of hides and skins were ordinarily the more numerous, but power establishments employed, both on average and as a whole, a much larger number of persons.

Not included in the returns just given is the Government Harness and Saddlery Factory at Cawnpore. Up to 1915 this was the only leather works or tannery under public ownership in India. The average number of persons employed there increased from 1,682 in the year before the war to 2,552 in 1915. Thus the total number of persons employed in India in 1915 on processes connected with hides and skins, so far as returns are available, was 9,339, and the number of works employing them was 41. It may be repeated that these are only the larger establishments of their kind, and that tanneries especially are very much more numerous. For instance, the returns which have been quoted include only one hides and skins factory for Mysore—a tannery at Bangalore employing 112 persons. But a report issued by the Mysore Department of Industries and Commerce on the foreign rail-borne trade of that State in 1916–17 gives the number of tanneries as 52; and an official statement issued in Madras towards the end of 1917 mentioned incidentally that there are several hundreds of tanneries in the Madras Presidency, Mysore, and Hyderabad.

The Madras Industry.—The majority of the larger tanneries in India before the war—as distinct from leather works, in which tanneries (where they exist) are asso-

ciated with leather manufactures—were in the Madras Presidency. In 1908, out of 23 tanneries employing 3,813 persons, Madras contained 19, employing 2,200 persons. In 1913, out of 22 tanneries employing 2,622 persons, Madras contained 15, employing 1,396 persons. In 1915, however, out of 26 tanneries employing 2,397 persons, Madras had only 9, employing 900 persons; Bengal had a larger number (12), but they employed only 540 persons.

As already seen from the trade returns, Madras provides the great bulk of the exports of both tanned hides and tanned skins from India. Next to seeds, the most valuable exports from the Presidency are hides and skins, raw and tanned, and in the five years ending 1912–13, over 88 per cent. of the value of these exports was provided by tanned hides and skins. Though classed as leather, the tanned hides and skins exported are not the finished product, ready for manufacture. Sir George Watt states (*Commercial Products of India*, 1908, p. 637), that "protracted immersion [of hides and skins in process of being tanned] has for many years past been admitted as impossible in India." This may explain, in part, the "half process" employed by native tanners connected with the export trade, though the nature of the tanning materials in use is also an important factor. In the Madras *Handbook of Commercial Information* (Madras, 1916), by Mr. M. E. Couchman, I.C.S., Director of Industries, the exports of tanned hides and skins are described as "tanned (unfinished)," and in Flemming's *Practical Tanning* (Philadelphia, 1910) it is stated that India-tanned sheep-skins and goat-skins, as received from India, "are imperfectly tanned, of a dark colour and quite hard. In order to complete the tanning and to improve the quality of the leather by making it softer and better adapted for fancy colours, it is necessary to remove from it some of the original tanning material, and to replace it with one that makes soft and light-coloured leather." Flemming recognises, however, the excellent quality of these skins, which "have considerable firmness and durability and yet are soft and pliable, and, when coloured and finished, cannot be excelled by any other leather.

This bears out the opinion of the Madras Government Expert, who is quoted by Mr. Couchman as stating, with reference to the provincial industry of tanning for export, that " the methods employed by the export tanners, when carried out under the best conditions as regards water, bark, and myrobalams, and careful supervision, turn out a class of leather that is of very high quality, very suitable for European and American leather dressers, and although several tanners have at different times tried to modernise the processes used for these skins, they have always returned to the old native methods."

Pre-war Changes.—True as the foregoing may be, changing conditions in the world's markets had considerably affected the Madras tanning industry even before the war. European methods of tanning were introduced in the first half of the nineteenth century, and at one time almost all the hides and skins exported from the Presidency were tanned. This continued to be the case as regards hides, as will be seen from the following table, which shows the course of trade up to the outbreak of war :

Exports of Hides from Madras Presidency

Hides.	Average Annual Exports in Cwt.			
	Quinquennium 1895–6 to 1899–1900.	Quinquennium 1900–1 to 1904–5.	Quinquennium 1905–6 to 1909–10.	Four Years 1910–11 to 1913–14.
Raw . . .	96	1,068	714	2,083
Tanned . .	124,593	128,713	157,060	152,322
Total . .	124,689	129,781	157,774	154,405

Throughout the period covered by the above table the exports of tanned hides from Madras formed between 80 and 90 per cent. of the total exports of tanned hides from India. Though subject to large fluctuations from year to year, in its general trend the trade in tanned hides followed a fairly normal course of development, agreeing in this respect with the total exports of raw hides from India, in which Madras has quite an insig-

nificant share. The figures for India as a whole are shown in the following table :

Exports of Hides from India

Hides	Average Annual Exports in Cwt.			
	Quinquennium 1895–6 to 1899–1900	Quinquennium 1900–1 to 1904–5	Quinquennium 1905–6 to 1909–10	Four Years 1910–11 to 1913–14
Raw	786,544	802,698	863,449	1,030,445
Tanned	144,724	144,580	180,769	183,745
Total	931,268	947,278	1,044,218	1,214,190

The course of the export trade in skins, during the two decades immediately prior to the war, was of a very different character, as regards both the Madras Presidency and India as a whole. While the exports of raw skins went up by leaps and bounds, the exports of tanned skins declined. In the Presidency, both tendencies received a check before the war, but in India as a whole they continued to operate up to the last year of normal trade. The following are the figures for Madras :

Exports of Skins from Madras Presidency

Skins	Average Annual Exports in Cwt.			
	Quinquennium 1895–6 to 1899–1900.	Quinquennium 1900–1 to 1904–5.	Quinquennium 1905–6 to 1909–10.	Four Years 1910–11 to 1913–14.
Raw	5,979[1]	42,557	67,832	36,524
Tanned	156,107	122,206	107,694	115,523
Total	162,086	164,763	175,526	152,047

[1] *The annual exports yielding this average were* 1,071 *cwt.,* 524 *cwt* 276 *cwt ,* 6,535 *cwt , and* 21,470 *cwt.*

Though not dominating the trade quite to the same extent as in the case of tanned hides, the exports of tanned skins from Madras form the great bulk of such exports from India (over three-fourths during the last twenty years before the war). On the other hand, the

raw skins exported from Madras are only a small part of the total trade. The following are the total figures for India :

Exports of Skins from India

Skins	Average Annual Exports in Cwt.			
	Quinquennium 1895–6 to 1899–1900.	Quinquennium 1900–1 to 1904–5.	Quinquennium 1905–6 to 1909–10	Four Years 1910–11 to 1913–14.
Raw . . .	120,139	266,723	480,649	531,240
Tanned . .	194,693	159,545	142,787	139,181
Total . .	314,832	426,268	623,436	670,421

Chrome Tanneries in Madras.—The growth in the exports of raw skins at the expense of the trade in tanned skins is due to the development abroad of chrome tanning, especially as practised in the United States for the production of glacé kid. The bulk of the raw skins exported before the war were consigned to the United States. Efforts to establish tanneries employing the chrome process in the Madras Presidency have attained some success in the last few years, though hitherto their influence on the export trade has not been great. The first experiments, in the early years of the present century, were not a commercial success, but those interested in the industry persevered, and two companies were established : the Chrome Leather Company, Madras, and the Mysore Tannery, Ltd., with works near Bangalore. After the early difficulties had been overcome, both companies made considerable and steady progress, and during the war a third chrome tannery has been established with local capital at Berhampur, near the extreme north-east corner of the Presidency. The Chrome Leather Company, Madras, which in 1916 employed a capital of about 9 lakhs (£60,000), has built a new tannery and factory at Pallavaram, a few miles south of Madras. Pallavaram was formerly the home of several tanneries which fell into decay with the development of the chrome tanning industry in the United States. About 1,000 men were engaged in 1916 in the Chrome Leather Company's

new works. Apart from the production of chrome leather—comprising both sole and upper leathers, as well as belting—bark-tanned sole leather of superior quality is turned out in considerable quantities. All classes of manufactured leather goods are produced, and large quantities of footwear and accoutrements have been supplied to the Government of India. When the *Madras Handbook of Commercial Information* was issued in 1916 considerable extensions were being made to the works with a view to the export of chrome-tanned upper and sole leathers on a large scale. The Mysore Tannery has been concentrating on the production of chrome-tanned black box sides for export, and the same class of goods is being produced by the Berhampur tannery for export via Calcutta.

Normally large quantities of raw hides and skins are bought in other parts of India and brought into Madras to be tanned, not only for export but for the home market. The best hides reach Madras from November to April. Skins are in the best condition from January to May, and buying stops to a large extent in the latter part of the hot weather, as the skins from animals killed at that time of the year are thin and unsuitable for the best class of work. Owing to the prejudice against killing cattle, most of the hides are from animals which have died of old age or disease, whereas skins are from goats and sheep slaughtered for food, and Indian skins therefore occupy a better relative position in the world's markets than Indian hides. It is only in a few large towns or military cantonments that hides from slaughtered animals are available in any quantity. Normally the tanned hides and skins are exported chiefly to the United Kingdom, because most other countries offering a market for Indian hides and skins have arranged their tariffs so as to encourage the importation rather of the raw than of the tanned product.

Effects of the War.—The Madras trade both in tanned hides and in tanned skins has been considerably affected by the war, but the changes have not operated in the same way in the two cases. The *Review of the Sea-Borne Trade of the Madras Presidency* for 1915–16 states that after the loss of enemy markets the Madras tanners

bought large quantities of the stocks of raw hides which accumulated in Calcutta, Agra, Cawnpore, and other northern hide-producing centres. These hides were tanned in Madras; shippers bought them freely, and sent heavy consignments to the United Kingdom. It was only to the United Kingdom, Ceylon, and the Straits Settlements that the export of tanned hides was allowed. For a time the supplies despatched to the United Kingdom were equal to the demand, and prices lagged after an initial rise; but subsequent to 1915–16, with the continued growth of military requirements and the adaptation of the leather-dressing industry in this country to war conditions, not only did the exports from Madras continue to expand, but prices again advanced, up to 50 per cent. on average above pre-war figures. As regards the exports of tanned goat-skins, trade with the United States increased over four-fold in 1915-16 and 1916–17, compared with 1913–14, but trade with the United Kingdom declined. Formerly German buyers purchased the bulk of the skins sold in the London market for their trade in finished leather goods. After war broke out many difficulties stood in the way of any determined efforts by British manufacturers to capture the trade. The opportunity was seized by American firms, who made arrangements for shipments direct to the United States instead of via London. In December 1916, however, the exportation of tanned skins from India was prohibited to all destinations except the United Kingdom, while by a Notice issued in Madras and Bombay in May 1917, as already stated, it was forbidden to put goat or sheep skins into tannage except by express permission. Later in the year licences were granted to renew the trade with the United States to a limited extent; the American Consul in Madras reported on October 4th, 1917, that the first consignment of tanned skins to the United States since the prohibition came into force was expected to be forwarded shortly (*Commerce Reports*, 1917, 285). But, with the restrictions imposed on the tanning of skins, supplies were naturally much reduced, and the trade returns for 1917–18 already quoted show how marked was the decline in the exports.

Much attention is being given by the Government of

India, as well as by private firms, to the improvement and extension of the tanning industry in India. As announced by H.E. the Viceroy in his address at the opening meeting of the Imperial Legislative Council's autumn session at Simla in September 1917, tanners in India have been given orders on a scale which has encouraged them to reform their methods, and by having to work regularly to a rigid standard of high quality a striking improvement in their work has already taken place. The Munitions Board, with the generous consent of a group of Central Indian States, has taken over the tannery at Maihar to test new tan stuffs, new combinations of known materials, new processes, and the manufacture of concentrated tanning extracts. The results are being tested on a commercial scale at the Allahabad tannery, which has been purchased for the purpose. In co-operation with the Forest Department the Munitions Board has organised the collection of promising materials, and has arranged with the railway companies for their distribution at uniform and low rates of freight. Students are being taken as apprentices, and it is hoped to form at Allahabad an institute in which the scientific aspects of tanning will be taught in conjunction with practical work on a commercial scale.

An important factor in the reputation acquired by Madras in connection with the tanning industry is that Avaram or Tarwad bark (*Cassia auriculata*) is found chiefly in the Madras and Bombay Presidencies, also in Mysore and Hyderabad States. This is one of the most useful materials for the production of soft leather by unskilled labour, but it is comparatively expensive. According to a *communiqué* issued by the Madras Government in April, 1918, the tanneries in North India, which have an advantage over the Madras tanneries in respect of the supplies of raw hides, have been trying to discover a tanning mixture equal to Avaram bark, and though they have not achieved complete success they have gone a long way towards it, and have produced some very cheap mixtures. To compete with these the price of Avaram bark must be greatly reduced. At present supplies are obtained by collecting the wild product,

and are limited, but it is believed that they might be greatly increased, with consequent reduction in price, if the shrub were cultivated. Land grants for this purpose are being offered to cultivators by the Madras Government on favourable terms.

Cow-hides (Kips)

From an economic standpoint, cattle in India play much the same part as draught-horses in England. Bulls and bullocks are the ordinary beasts of burden. They do the work on the farms—ploughing and other agricultural operations. They are the commonest means of transport: loads are hauled in bullock-wagons in the country districts and through the streets of cities; travellers are conveyed in bullock-carts where no railways run. Cows are of some economic value as milk producers. But cattle breeding and rearing for meat supply are almost unknown in India. The religious scruples of the Hindus against taking life, and the special sanctity attaching in their eyes to the cow, combine to ensure a natural death to the vast majority of the cattle in India. It follows that there are large numbers of old and worn animals, which fall a specially easy prey to outbreaks of virulent diseases and to the scarcity of famine years. At such times the rate of mortality among cattle is greatly increased, and the exports of hides go up with a bound.

These conditions affect not only the quantity but the quality of the hides exported. Beasts that have dragged out a lingering existence will not supply hides of the same quality as slaughtered prime cattle. Apart, however, from this fundamental characteristic of the trade in Indian hides, the cattle of India are, in general, not of a high grade. There are various breeds both of heavy draught cattle and of cattle for quick road work, as well as certain good milking strains, which are maintained by the observance of sound principles of cattle-breeding. But as regards the great mass of the cattle no attention is paid to such matters. Good grazing lands are limited. Stock farming is not general. The possession of cattle is a circumstance attendant on the pursuit of agriculture.

Breeding is little regulated, and the animals are badly fed. In the rice tracts the diet consists largely of rice straw, and the cattle are often miserably weak. But perhaps the chief distinguishing feature of Indian cow-hides is their small size and weight. Indian cattle are very much smaller than English, the average weight of the raw hides being only 9 lb. in a dried state, equivalent to 24 lb. wet. The various breeds, however, differ considerably in size. Judged by the hides which enter into the export trade, the smallest cattle are found in the north-east (where Dacca is the centre for the collection of hides), south-east and south-west districts; the largest in Sind, Rajputana, and the Punjab; and intermediate sizes in the Central Provinces. Size is not a criterion of value from the leather merchants' point of view, for some of the largest hides are the worst in quality, coming from badly fed animals which yield a flat skin with a humpy shoulder. In comparisons of weights, account must also be taken of the method of curing the raw hides. A great change has taken place in this respect during the past half-century. Formerly practically all the hides were cured by the use of lime, salt, and earth, and the creation of false weight was a native science. Now the great bulk of the hides exported are dried out in the sun or under cover, and treated with an arsenical solution. Arsenicated and dry-salted hides may range in weight from a maximum of 24 lb., for bulls, down to ¾ lb. for calf-skins; wet-salted hides may weigh as much as 36 lb. Practically all, however, are unsuitable for the manufacture of sole leather, and their chief use is for making upper shoe leather. In the early stages of the war the raw hides considered by the War Office to have military value were arsenicated hides weighing 6 lb. or over, and dry-salted hides weighing 9 lb. or over. In March 1917, however, all hides weighing over 4 lb. arsenicated, 7 lb. dry-salted, and 12 lb. wet-salted, including rejections and double rejections, were reserved by the Government of India for export on Government account.

Defects of Preparation.—Dry-salting is still extensively practised in the case of hides exported from Dacca, and wet-salting in the case of some of the hides exported

from Burma. In both cases the hides have an unfavourable reputation in Europe, owing not so much to the use as to the abuse of the methods employed. Hides lightly salted after being thoroughly fleshed are excellent for tanning. Those exported from Dacca, however, are not only heavily weighted with salt earth, but are often disfigured by butcher-cuts made during flaying, and have adhering to them a large amount of flesh, which sets up putrefaction. Intrinsically Dacca kips constitute a good class of hides, being generally of good pattern and fairly well grown; but they are largely spoiled in their treatment, which in the opinion of one leading firm of importers is worse to-day than it was fifty years ago. The hides exported from Burma vary greatly both in growth and quality. Rangoon is the outlet for hides not only from all over Burma, but from the trans-frontier districts of China and Annam, though as regards the supplies from across the Chinese frontier a competing route which is beginning to make its influence felt is that afforded by the French railway connecting Yunnan-fu with Haiphong (Tongking). Some of the hides exported from Rangoon are intrinsically very fine, and the trade, which has already grown considerably in the last few decades, is capable of much further expansion. Yet the condition in which the hides are exported has led to the assertion that no hide-producing country under British control is so far behind the times as Burma. The southern supply consists of sun-dried and arsenicated hides, but in the northern coastal districts in particular, the hides are heavily cured and adulterated and very badly flayed, and in Rangoon itself the practice has grown up of wet-salting hides which have already been dried.

Most of these criticisms do not apply to the main supplies of raw Indian cow-hides. Those from the north-west parts of India are for the most part well prepared and flayed. In general, however, the flaying of hides in India is not of a high standard. The flaying of city-slaughtered cattle is done by Mohammedans, who also do the slaughtering. Cattle which die a natural death are usually flayed by low-caste Hindus. A suggestion that the quality of the work might be improved by a system of bonuses

for well-flayed hides finds strong support in the results of a recent experiment in Bombay. About 200 cattle are killed daily in the Bandra slaughter-house, which is under the Bombay municipality. Formerly only about a third of the hides could be used for Army purposes: the rest had to be rejected because of butcher-cuts. The Market Superintendent granted the workmen an extension of time for slaughtering, and the buyer for the Government Tannery was authorised to pay the skinners a bonus of two annas for every well-flayed hide. As a result, according to a Government *communiqué* dated October 1st, 1917, less than 5 per cent. of the hides have since been rejected for faulty flaying.

Unfortunately, this gain in efficiency has not been general. In May, 1918, the Indian Munitions Board issued a statement to the Calcutta dealers in raw hides, regretting that no improvement had been effected in the cure and fleshing of dry-salted hides, and giving notice that on and after July 15th, 1918, Government would refuse to purchase any raw hides which were not cleanly-fleshed or which bore more cure than was necessary for the preservation of the hide. The style of cure laid down as a standard is that of the original cure of "real Meherpore" hides.

Another defect in the hides which greatly limits their value for tanning purposes is due to the native methods of branding cattle. Sometimes the brand consists of double semi-circular lines covering the butt part of the hide and even extending to the shoulder. It has been estimated that as a result of this practice there is a reduction of between one and three rupees in the value of each hide. In some districts nearly half the hides are spoiled for Army purposes by branding. The Indian Munitions Board has brought the matter to the attention of Local Governments in the hope that native owners of cattle may be induced to adopt the use of smaller brands.

The religious customs of the natives play their part in the branding of cattle, as in other matters affecting the trade in Indian hides. Veterinary methods are also an important factor. Suggestions for obviating the difficulty are now under consideration. If they can be

carried out, and if at the same time means can be devised for securing better workmanship in the flaying and curing of the hides, the reputation of East Indian kips will be greatly benefited, with corresponding advantage to the prices they command.

Exports of Raw Kips.—The following table shows the number, the total weight and value, and the average weight and value, of the raw cow-hides exported from India in each year for which returns are available. The year 1912–13 was the first in which these exports were separately recorded in the Indian trade returns.

Exports of Raw Cow-hides from India

Year.	Quantity.		Value.	Average weight.	Average export value per lb.
	Number	Weight Cwt.	£	lb.	d.
1912–13	10,277,990	831,200	3,969,754	9·1	10·2
1913–14	8,967,518	743,037	3,937,007	9·3	11·4
1914–15	5,947,080	480,513	2,477,553	9·0	11·0
1915–16	8,180,599	689,113	3,743,928	9·4	11·6
1916–17	6,410,937	581,645	3,335,926	10·2	12·3
1917–18	—	317,588	1,546,798	—	10·4

During the war, up to and including the year 1917–18, the exports of raw cow-hides fell off considerably in quantity, and prices did not greatly increase; in 1917–18, indeed, the average export value per lb. was less than in the year before the war. In percentages of the exports in 1913–14, the exports in the four following years were: in 1914–15, weight 65, value 63; in 1915–16, weight 93, value 95; in 1916–17, weight 78, value 85; in 1917–18, weight 43, value 39.

The following table shows the dominant position occupied by the ports of Bengal in the export trade in raw cow-hides, and also the growing importance of the Sind ports (Karachi) during the first three years of war:

Exports of Raw Cow-hides by Provinces

Provinces.	Percentages of weight.				
	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.
Bengal	77·8	76·0	72·9	73·2	56·5
Sind	10·5	9·5	12·2	16·8	22·6
Burma	9·9	12·6	12·5	10·0	11·7
Others [1]	1·8	1·9	2·4	—	9·2
Total	100·0	100·0	100·0	100·0	100·0

[1] *Almost wholly Bombay.*

The distribution of the raw cow-hides exported, as given in the Indian trade returns, is shown in the following table. The italicised figures denote percentages.

Exports of Raw Cow-hides: Distribution

	1912-13.	1913-14.	1914-15	1915-16.	1916-17.
Total quantity *cwt.*	831,200	743,037	480,513	689,113	581,645
„ value	£3,969,754	3,937,007	2,477,553	3,743,928	3,335,926
	Cwt.	*Cwt*	*Cwt.*	*Cwt.*	*Cwt*
To British Countries:					
United Kingdom	35,076	14,919	77,923	56,298	106,099
	4·2	*2·0*	*16·2*	*8·2*	*18·2*
Canada . .	5,247	8,978	2,261	11,006	12,848
Others . .	757	166	156	4,581	2,300
Total . .	41,080	24,063	80,340	71,885	121,247
	4·9	*3·2*	*16·7*	*10·4*	*20·9*
To Allied Countries:					
Italy . .	116,095	92,662	66,211	358,718	163,721
	14·0	*12·5*	*13·8*	*52·1*	*28·1*
France . .	17,844	14,283	6,867	21,679	37,308
	2·1	*1·9*	*1·4*	*3·1*	*6·4*
Belgium . .	18,850	20,435	6,565	—	—
	2·3	*2·8*	*1·4*		
United States .	69,434	36,820	73,884	191,657	208,604
	8·4	*5·0*	*15·4*	*27·8*	*35·9*
Others . .	2,397	2,127	736	9	2,310
Total . .	224,620	166,327	154,263	572,063	411,943
	27·0	*22·4*	*32·1*	*83·0*	*70·8*
To Enemy Countries:					
Germany .	365,874	356,195	137,655	—	—
	44·0	*47·9*	*28·6*		
Austria-Hungary	113,620	141,537	38,865	—	—
	13·7	*19·0*	*8·1*		
Turkey . .	8,924	2,961	572	—	—
Bulgaria . .	2,683	1,422	1,995	—	—
Total . .	491,101	502,115	179,087	—	—
	59·1	*67·6*	*37·3*		
To Neutral Countries:					
Spain . .	57,793	41,865	41,890	28,135	34,341
	7·0	*5·6*	*8·7*	*4·1*	*5·9*
Holland . .	16,252	7,771	2,046	—	—
Norway . .	125	83	2,243	9,862	13,531
Sweden . .	—	—	19,526	6,564	—
Others . .	229	813	1,118	604	583
Total . .	74,399	50,532	66,823	45,165	48,455
	9·0	*6·8*	*13·9*	*6·6*	*8·3*

In the year before the war over two-thirds of the exports of raw cow-hides from India were consigned to enemy countries (Germany, nearly half), and between one-fifth and one-fourth to Allied countries. Exports to the United Kingdom were only 2 per cent. of the total and to all British countries only 3·2 per cent. During the war the United States and Italy have taken the bulk of the exports. According to a statement issued by the Government of India and published in the *Indian Trade Journal* (1917, **44**, 206), in the pre-war cow-hide trade from Calcutta the hides taken by Germany and Austria averaged about 9½ lb. in weight; it is believed that the heaviest were used exclusively for the Scandinavian market. The hides taken by Italy and Spain averaged from 5½ lb. to 6 lb. The war made no change in this respect in the Spanish trade, but Italy's takings, which in 1915–16 especially were very greatly increased, went up in average weight to 7½ lb. Heavier classes of hides have been taken by the United States (11½ lb.) and the United Kingdom (12 lb.).

In Europe the chief centre of the pre-war trade in raw Indian cow-hides was Hamburg, and in India the collection and export of the hides had passed into the hands of firms consisting of Germans, or naturalised persons of German origin, who formed an effective ring. One or two English firms had attempted occasionally to enter the trade, but failed to break the ring, and in the case of an Indian firm which made the attempt the ring adopted, with some success, a policy of boycott. During the war steps have been taken not only to cut off supplies from enemy markets, but to bring the trade at its source under British control. Proposals for dealing with the post-war trade problem were made by the Imperial Institute Committee on Hides and Tanning Materials, after consultation with the United Tanners' Federation of Great Britain and Ireland, and with representatives of British firms in India, who were ready to enter the trade under certain conditions. Lecturing before the Indian Section of the Royal Society of Arts on the Indian Hide and Leather Trade on February 14th, 1918, Sir Henry Ledgard, a member of the Committee and lately President

of the Upper India Chamber of Commerce, stated (*Journal R.S.A.*, 1918, **46**, 281) that the Tanners' Federation were prepared to handle increasing quantities of kips up to 4,000,000 in the third year after the conclusion of the war, subject to :

1. The imposition in India of an export duty on raw hides, to be remitted in the case of hides tanned within the Empire.
2. The elimination of firms with German or Austrian connections from the trade.
3. The granting, where necessary and advisable, of financial assistance to tanners adapting their yards or building tanneries to deal with East Indian hides.

Sir Henry Ledgard added that in their report the Committee of the Imperial Institute " also laid stress on the importance of the fullest development possible of the tanning of kips in India which shall involve the employment of Indian labour and capital in the manufacture of leather goods from Indian tanned leather."

Recent developments in the tanning of kips in India will be seen from the next section.

Tanned Cow-hides.—The exports of tanned cow-hides from India in each year for which returns are available are shown in the following table :

Exports of Tanned Cow-hides from India

Year	Quantity.		Value.	Average weight.	Average export value per lb.
	Number	Weight. Cwt	£	lb.	d.
1912–13	2,936,440	215,429	1,278,000	8·2	12·7
1913–14	2,006,857	158,383	982,654	8·8	13·3
1914–15	2,480,225	191,565	1,447,126	8·7	16·2
1915–16	3,273,820	247,380	1,892,594	8·5	16·4
1916–17 [1]	3,867,418	286,210	2,687,622	8·3	20·1
1917–18 [2]	—	342,806	3,115,887	—	19·5

[1] *Including* 140,869 *cwt. valued at* £1,274,432 *on Government account* (*average value per lb*, 19·4*d*)

[2] *All but* 909 *cwt., valued at* £9,567, *on Government account.*

The average weight of the tanned hides exported is slightly (under 1 lb.) less than that of the raw hides. Before the war the difference between the average prices

(export value) of the raw and tanned hides was from 2*d.* to 2½*d.* per lb.; in the first two years of the war it rose to 5*d.* per lb., in 1916–17 to nearly 8*d.* per lb., and in 1917–18 to 9*d.* per lb., this being due to the increase in value of the tanned hides. The total quantity exported has also increased. In percentages of the exports in 1913–14, the exports in the four following years were: in 1914–15, weight 121, value 147; in 1915–16, weight 156, value 193; in 1916–17, weight 181, value 274; in 1917–18, weight 216, value 317. Coincident with this increase in the exports of tanned cow-hides there was, as already noted, a large decrease in the exports of raw cow-hides. Consequently during the war the proportion of tanned to raw hides has greatly increased. In 1912–13 the proportion by weight was a little over 1 to 4, and in 1913–14 a little over 1 to 5, whereas in 1916–17 it was nearly 1 to 2, and in 1917–18 the weight of tanned hides exported was actually a little in excess of the weight of raw hides.

About 80 per cent. of the exports of tanned cow-hides from India are despatched ordinarily from Madras ports (nearly all from the port of Madras), and the rest almost wholly from Bombay ports. The Madras *Handbook of Commercial Information* states that tanned (unfinished) cow-hides are exported from that presidency in pressed, gunnied, roped bales, each containing from 650 lb. to 675 lb., or sometimes 700 lb. These tanned hides are available for export all the year round, and are sold on standards, of which each firm has its own. They are mostly described by names of localities: *i.e.* Coasts, Bangalores (Best and Ordinary), Pallavarams, Hyderabads, Cocanada Coasts. Light Cocanada Coasts weigh about 7½ lb. and light Bangalores 8 lb. to 8½ lb. (minimum in both classes, 3 lb.; maximum, 14 lb.). "Heavies" in both classes usually weigh from 14½ lb. to 16 lb. (minimum, 12 lb.; maximum, 20 lb.). All but one or two per cent. of the total exports of tanned cow-hides from India are consigned ordinarily to the United Kingdom, and it is believed that they are mostly absorbed into the industry of this country. The precise figures given in the Indian trade returns are:

Tanned Kips: Distribution of Exports from India

	1912–13.	1913–14.	1914–15	1915–16.	1916–17.
Total quantity *cwt.*	215,429	158,383	191,565	247,380	286,210
„ value .	£1,278,000	982,654	1,447,126	1,892,594	2,687,622
	Cwt.	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
To British Countries					
United Kingdom	213,673 *99·2*	155,550 *98·2*	189,551 *98·9*	246,366 *99·6*	285,330 *99·7*
Others . .	1,179	799	572	1,014	863
Total . .	214,852	156,349	190,123	247,380	286,193
To Foreign Countries	577	2,034	1,442	—	17

One reason why foreign countries take so small a proportion of the tanned kips is that most countries, while admitting raw hides free, impose a tariff on tanned hides. So long as that condition continues, and subject to whatever limit there may be to the ability of British industry to absorb the tanned kips, it would seem that, apart from any other action which might be taken, the British share in the total trade in Indian cowhides might be increased by extending the tanning of these hides in India before export.

Although the United Kingdom has always been the chief market for Indian tanned cow-hides, leather of this description was so little appreciated for the uppers of British Army boots before the war that War Office contracts ruled out East India kips in favour of heavy ox-hides (Sir Henry Ledgard, *opus cit.*). During the war there has been a great change. The *Pioneer Mail* of January 25th, 1918, quoting the Controller of Hides and Wool in India, stated that at least three-fifths of the upper leather used in the United Kingdom in the manufacture of boots for the Allied Armies was supplied from East India kips. The magnitude of the demand may be appreciated from the further statement that the minimum requirements of Army upper leather for the year 1917 were estimated at 80,000,000 feet. Nor are the export returns the only measure of the increased output of tanned kips in India. There has been a great development in the Indian manufacture of leather accoutrements and boots to meet the needs of the Army in India and the Indian Expeditionary Forces. In this connection,

according to the *Pioneer Mail*, the Indian Munitions Board arranged to supply 35,000 kips monthly to the boot factories in Cawnpore, and 8,000 kips monthly to the Government Harness and Saddlery Factory in Cawnpore.

Buffalo-hides

Buffaloes are used in India for the same purposes as other cattle—the bulls for tillage and road work, the cows for the supply of milk. They are not so numerous as ordinary cattle, but are larger and more powerful. There are considerable differences between the different breeds, and generalised statements can only be made with reserve; but the buffaloes of Southern India are mostly smaller and less valuable than those found in the northern provinces and Burma. Little attention is given to breeding. As a rule, bull buffaloes can be bought very cheaply, and except in specially good grazing districts it does not pay to make a business of rearing them. Both bulls and cows are slaughtered in large numbers, notably at Agra, Aligarh, and Sekundra, for the dried meat export trade to Burma. In 1915–16 Burma's imports of this commodity from other provinces were valued at £150,000.

Raw Buffalo-hides.—The Indian export trade in buffalo-hides, raw and tanned, amounts in weight to about one-third of the export trade in cow-hides. Separate returns were first published in 1912–13. The following table shows the number, total weight and value, and average weight and value of the raw buffalo-hides exported in that and subsequent years:

Exports of Raw Buffalo-hides

Year	Quantity		Value	Average weight	Average value per lb
	Number	Weight. Cwt	£	lb	d
1912–13	2,055,678	345,037	1,266,071	18·8	7·9
1913–14	1,967,018	345,864	1,469,113	19·7	9·1
1914–15	1,213,113	211,745	921,993	19 5	9·3
1915–16	970,742	162,887	621,837	18·8	8·2
1916–17	1,495,046	261,099	1,351,626	19 6	11·1
1917–18	—	84,900	425,112	—	10 7

The average weight of the raw buffalo-hides exported is about double that of the raw cow-hides. The average export value of buffalo-hides before the war was about

2d. per lb. less than that of cow-hides, and in 1915–16 the difference increased to nearly 3½d. per lb.; but in 1917–18 buffalo-hides commanded a slightly higher price than cow-hides. During the war there has been a marked decrease in the exports of raw buffalo-hides, and in 1917–18 the drop was especially great. In percentages of the exports in 1913–14 the exports in the next four years were: in 1914–15, weight 61, value 63; in 1915-16, weight 47, value 42; in 1916—17, weight 75, value 92; in 1917–18, weight 25, value 29.

Bengal is the outlet for about four-fifths of the exports of raw buffalo-hides; Burma provides from 10 to 15 per cent. (only 5 per cent. in 1916–17); and most of the remainder are despatched from Sind. The hides from Bengal were mostly exported, before the war, to Austria and the United States, the average weights taken by those two countries being about the general mean—19 to 20 lb. The hides from Burma are much heavier. They used to be exported chiefly to the United Kingdom and Turkey, which took weights of from 40 to 60 lb. (*Indian Trade Journal*, 1917, **44**, 206). The distribution of the total exports, before and during the war, is shown in the following table, the italicised figures denoting percentages:

Raw Buffalo-hides: Distribution of Exports

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.
Total quantity *cwt.*	345,037	345,864	211,745	162,887	261,099
,, value	£1,266,071	1,469,113	921,993	621,837	1,351,626
	Cwt.	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
To British Countries					
United Kingdom	46,551 *13·5*	26,254 *7·6*	52,062 *24·6*	41,711 *25·6*	37,426 *14·3*
Others	4,576	5,639	957	1,109	2,152
Total	51,127 *14·8*	31,893 *9·2*	53,019 *25·0*	42,820 *26·3*	39,578 *15·2*
To Allied Countries					
United States	143,766 *41·7*	114,476 *33·1*	107,074 *50·6*	108,495 *66·6*	215,718 *82·6*
Italy	10,921 *3·2*	7,150 *2·1*	1,322 *0·6*	10,251 *6·3*	2,233 *0·9*
France	6,646 *1·9*	3,232 *0·9*	1,368 *0·6*	55	230
Others	3,612	1,928	788	14	1,783
Total	164,945 *47·8*	126,786 *36·7*	110,552 *52·2*	118,815 *72·9*	219,964 *84·2*

	1912–13 Cwt.	1913–14. Cwt.	1914–15. Cwt.	1915–16. Cwt.	1916–17. Cwt.
To Enemy Countries					
Austria-Hungary	58,276 16·9	91,736 26·5	20,799 9·8	—	—
Germany .	22,148 6·4	30,785 8·9	7,744 3·7	—	—
Turkey . .	15,685 4·5	30,134 8·7	10,277 4·9	—	—
Bulgaria .	2,966	1,241	2,684	—	—
German East Africa	4	—	—	—	—
Total . .	99,079 28·7	153,896 44·5	41,504 19·6	—	—
To Neutral Countries					
Holland . .	25,966 7·5	32,485 9·4	3,097 1·5	—	—
Others . .	3,920	804	3,573	1,252	1,557
Total . .	29,886 8·7	33,289 9·6	6,670 3·2	1,252 0·8	1,557 0·6

As in the case of raw cow-hides, only a minor part of the exports of raw buffalo-hides from India before the war was consigned to countries within the British Empire, though in 1912–13 the United Kingdom stood third in the list among individual countries. Foreign countries took 85 per cent. of the total in 1912–13, and over 90 per cent. in 1913–14. But whereas the largest buyer of kips was Germany, the largest buyer of buffalo-hides was the United States, which took two-fifths of the total in 1912–13 and a third of the total in 1913–14. The next largest share of the pre-war exports was taken by Austria-Hungary—one-sixth in 1912–13, and one-fourth in 1913–14. It is interesting to compare the exports to all Allied countries and all Enemy countries in the two years before the war. The total exports in those two years were practically the same. In 1912–13 Allied countries took 47·8 per cent. of the total, against 28·7 per cent. consigned to Enemy countries. In 1913–14 the positions were reversed, Enemy countries taking 44·5 per cent. of the total against 36·7 per cent. consigned to Allied countries. In the first two years of the war the United States strengthened the dominating position it occupied in this trade, taking half the total exports of raw buffalo-hides in 1914–15 and two-thirds of the total in 1915–16; but this increase in the United States percentage share of the trade was entirely due to the shrinkage of the total exports, for neither in 1914–15 nor in 1915–16 were the

actual exports to the United States so large as either in 1912–13 or in 1913–14. In 1916–17, however, not only did the proportion of the exports consigned to the United States increase to over four-fifths, but the quantity was 50 per cent. greater than in 1912–13, the previous highest on record. The United Kingdom's share in the trade increased during the first two years of the war to one-fourth of the total, but declined again in 1916–17 to 14·3 per cent.; the actual exports to the United Kingdom, during the quinquennium for which returns are available, reached their minimum in 1913–14 (26,000 cwt.) and their maximum in 1914–15 (52,000 cwt.).

Tanned Buffalo-hides.—Very few buffalo-hides, comparatively, were tanned for export before the war, but the character of the trade in buffalo-hides has undergone a marked change in this respect during the war. The number, total weight and value, and average weight and value of the tanned hides exported are shown in the following table for 1912–13 (the first year for which separate returns are available) and subsequent years.

Exports of Tanned Buffalo-hides

Year.	Quantity.		Value	Average weight.	Average value per lb.
	Number	Weight. Cwt	£	lb.	d.
1912–13	168,119	17,004	78,612	11·3	9 9
1913–14	160,604	15,545	75,127	10·8	10·4
1914–15	263,040	25,261	157,520	10·8	13·4
1915–16	270,137	24,234	145,102	10·0	12·8
1916–17	339,038	32,178	239,483	10·6	15·9
1917–18	—	18,552	126,733	—	14·6

The average weight of the tanned buffalo-hides exported is not much more than half that of the raw hides. Before the war the average value of the tanned hides was only from 1*d.* to 2*d.* per lb. more than that of the raw, but the difference increased during the war till in 1916–17 it was nearly 5*d.* per lb., although in the interval the raw hides had themselves increased considerably in value. In 1917–18 the average export values per lb. of both raw and tanned buffalo-hides declined, and the difference between them was reduced to just under 4*d.* per lb. The total weight as well as the value of the tanned buffalo-hides entering into the export trade increased during the first three years of the war, but dropped again to little more than the pre-war figure in

1917–18. In percentages of the exports in 1913–14, the exports in succeeding years were: in 1914–15, weight 163, value 210; in 1915–16, weight 156, value 193; in 1916–17 weight 207, value 319; in 1917-18, weight 119, value 169. As this increase in the weight of the tanned hides exported was accompanied by a decrease in the export of raw hides, the ratio of raw and tanned hides underwent a striking change during these years. Before the war the trade in tanned buffalo-hides was remarkable for the smallness of its proportion to the trade in raw hides; the proportion of raw to tanned was 20 : 1 in 1912–13 and 22 : 1 in 1913–14. The change on the outbreak of war was immediate. In 1914–15 the proportion was 8 : 1; in the next two years there was little further change; in 1917–18 the proportion was 4·5 : 1.

Nine-tenths of the Indian export trade in tanned buffalo-hides is done from Madras (86 per cent. in 1912–13, 90 per cent. in 1913–14, 88 per cent. in 1914–15, 97 per cent. in 1915–16, 94 per cent. in 1916–17). The remaining exports of this class practically all find an outlet through Bombay. The Madras *Handbook of Commercial Information* states that the tanned hides are available all the year round, and are packed in pressed bales, wrapped in gunnies and roped, each containing from 650 lb. to 675 lb. Cold-weather hides are slightly better than hot-weather. They are usually sold on standards, and the average weight is given as 12–13½ lb.

The distribution of the exports, as shown by the Indian trade returns, was almost entirely to British countries, even before the war. The following are the figures, with percentages added in italics:

Tanned Buffalo-hides. Distribution of Exports

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17
Total quantity *cwt*	17,004	15,545	25,261	24,234	32,178
,, value .	£78,612	75,127	157,520	145,102	239,483
To British Countries	Cwt	Cwt.	Cwt	Cwt	Cwt
United Kingdom	14,704 *86 5*	14,047 *90 4*	24,371 *96·5*	23,894 *98 6*	31,789 *98·8*
Egypt . .	1,655 *9 7*	710 *4·6*	·61	340	387
Others . .	179	127	50	—	—
Total . .	16,538 *97 3*	14,884 *95 7*	24,582 *97·3*	24,234 *100·0*	32,176 *100·0*
To Foreign Countries[1]	466	661	679	—	2

[1] *Mostly to Turkey.*

As in the case of kips, a question for consideration is whether the British share in the total trade in buffalo-hides could not be increased by extending the tanning of these hides in India before export. It is believed that a far larger quantity of buffalo-hides could be absorbed by British industry than is at present the case. The partially tanned hides hitherto taken by the United Kingdom are admirably adapted for dressing, and might command a larger sale, especially if the medium and heavy hides could be tanned with materials which would produce a more solid leather. Medium weights could be used for in-soling and other purposes for which shoulders are employed, and heavy weights for soles. "Heavies," if chrome tanned, might also be used for picking bands or in the raw state for pickers. Light weights are suitable for use as upper leather.

Calf-skins

Calf-skins form the smallest class of hides and skins separately recorded in the returns of the export trade of India. It is only for raw calf-skins that separate figures are given, and as these are recorded as one of the groups under the heading "Raw Hides," it is to be inferred that tanned calf-skins are included among "Other Hides" under the heading "Hides, Tanned or Dressed." In that case the exports of tanned calf-skins are very small, for the total of "Other Hides, Tanned or Dressed," in the four years 1912–13 to 1915–16 ranged only from 100 cwt. to 830 cwt., and though the total rose to 4,002 cwt. in 1916–17, it was down again to 316 cwt. in 1917–18. The exports of raw calf-skins were first recorded separately in 1912-13, and the figures for that and following years are shown in the following table, with the calculated average weights and values :

Exports of Raw Calf-skins

Year.	Quantity.		Value.	Average weight.	Average value per lb.
	Number.	Weights. *Cwt.*	£	*lb.*	*d.*
1912–13 .	1,099,200	29,640	126,652	3·0	9·2
1913–14 .	809,550	26,116	122,039	3·6	10·0
1914–15 .	589,433	21,158	99,161	4·0	10·0
1915–16 .	858,639	29,761	157,367	3·9	11·3
1916–17 .	1,490,141	50,933	306,401	3·8	12·9
1917–18 .	—	15,415	85,182	—	11·8

Judged by pre-war standards, the most noticeable features of the subsequent trade in raw calf-skins have been the big increase in the exports in 1916–17 and the big decline in 1917–18. Before the war from 80 to 90 per cent. of the exports were despatched from Bengal ports, the remainder going through Sind. In the first three years of the war the share of Bengal declined to 39 per cent. while that of Sind increased to 60 per cent.

The distribution of the exports is shown in the following table, the italicised figures denoting percentages :

Raw Calf-skins ; Distribution of Exports

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17
Total quantity *cwt.*	29,640	26,116	21,158	29,761	50,933
,, value .	£126,652	122,039	99,161	157,367	306,401
	Cwt.	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
To British Countries [1]	1,483	956	2,044	1,196	1,282
	5·0	*3·7*	*9·7*	*4·0*	*2 5*
To Allied Countries .					
United States	14,921	4,076	8,092	12,813	36,845
	50·3	*15·6*	*38 2*	*43·1*	*72·3*
Italy . .	5,890	6,822	4,666	14,391	6,917
	19·9	*26·1*	*22 5*	*48·4*	*13·6*
Others [2] . .	720	342	384	190	24
Total . .	21,531	11,240	13,142	27,394	43,786
	72·6	*43·0*	*62·1*	*92·1*	*86·0*
To Enemy Countries :					
Germany .	404	1,213	1,083	—	—
	1·4	*4·6*	*5·1*		
Austria-Hungary	1,516	4,556	479	—	—
	5·1	*17·5*	*2·3*		
Total . .	1,920	5,769	1,562	—	—
	6 5	*22·1*	*7·4*		
To Neutral Countries					
Spain . .	4,292	6,843	4,023	1,171	5,749
	14·5	*26 2*	*19·0*	*3·9*	*11·3*
Others [3] .	414	1,308	387	—	116
Total . .	4,706	8,151	4,410	1,171	5,865
	15·9	*31·2*	*20·8*	*3·9*	*11 5*

[1] *Practically all to the United Kingdom*
[2] *Chiefly France* [3] *Chiefly Holland.*

There are very few exports of raw calf-skins from India to British countries except the United Kingdom,

and its share in the trade is only small. The great bulk of the exports before the war were taken by four countries —the United States, Italy, Spain, and Austria-Hungary. These four countries took 90 per cent. of the total in 1912–13 and 85 per cent. in 1913–14. In the first three years of the war most of the exports went to the United States and Italy, Spain making a good third except in 1915–16, when Italy's share was unusually large. In general, the United States has been the principal factor in the trade; in three out of the five years under review, it provided the largest market for India's raw calf-skins.

Goat-skins

Goats are found all over India, and range from the large, well-proportioned, long-haired breeds of the Himalayas to the nondescript but hardy varieties in the south of the peninsula. In the economic life of India they are primarily of importance as a source of milk and meat supply; though the Himalayan breeds are also kept for the sake of their hair. In general, breeding is subject to little control, and the varieties are as numerous as they are ill-defined. The female produces two or three kids at a birth, often twice a year. In the fine weather season the professional shepherds wander over Peninsular India with their sheep and goats, letting them graze by day and at night folding them on arable land, which they fertilise with their droppings, a service regarded as sufficiently valuable to command payment from the cultivators.

Both in weight and in value goat-skins are the second most important constituent of the Indian trade in hides and skins, ranking next to kips. Normally they provide, in raw and tanned skins, exports amounting to over 500,000 cwt., with an export value of over £3,000,000. As in the trade in hides, the great bulk of the exports consist of the raw product. The skins from the male animals are characterised by a strong smell, which does not disappear even from some finishes of the leather; but if the males have been castrated their skins are said to

be free from this drawback, and to command a higher price in consequence (*Leather World*, 1918, **10**, 419).

Raw Goat-skins.—The following table shows the exports of raw goat-skins for six years :

Exports of Raw Goat-skins from India

Year.	Quantity.		Value.	Average weight.	Average value per lb.
	Number.	Weight. Cwt.	£	lb.	d.
1912–13	21,716,896	520,954	2,278,616	2·7	9·4
1913–14	19,690,958	453,356	2,085,132	2·6	9·9
1914–15	16,409,829	382,060	1,561,018	2·6	8·8
1915–16	19,618,894	399,951	1,836,543	2·3	9 8
1916–17	27,866,563	521,808	4,275,888	2·1	17·6
1917–18	—	392,034	2,913,719	—	15·9

The first result of the war was to reduce the exports, but in 1916–17 they were again fully normal in quantity, while the average price, which until then had shown little variation from the pre-war figure, increased nearly 80 per cent. In 1917–18 there was again a considerable reduction in the quantity exported, and a slight reduction in the average price, which, however, remained much above the pre-war figure. In percentages of the exports in 1913–14, the exports in the four following years were : in 1914–15, weight 84, value 75 ; in 1915–16, weight 88, value 88 ; in 1916–17, weight 115, value 205 ; in 1917–18, weight 86, value 140.

The average price per lb. (export value) before the war was slightly less than that of raw cow-hides and slightly more than that of raw buffalo-hides. The average weight is about 2½ lb. The average weight of any particular consignment, however, may differ from this considerably, being determined not only by the size of the skins but by the way in which they are cured. The following particulars from the Madras *Handbook of Commercial Information* will serve to indicate the different methods of treating the skins, though in so far as the statements about these methods are comparative, it must be remembered that the trade of Madras in raw goat-skins forms only a small fraction of the whole. In Madras the skins are mostly dry-salted with the hair on, but sometimes they are flint-dried (air-dried ; hard)

and very occasionally are wet-salted in the hair, or unhaired and then pickled in a solution of alum and salt. Each skin varies from the rest, and they are very difficult to grade. Firms have their own standards for sorting into firsts and seconds, the substance and condition of the skins being the chief factors taken into account. Supplies are available all the year round, though as a rule cold-weather skins are better than hot-weather skins. Pickled skins are exported in casks, the others in pressed bales packed in mats and gunnies, each containing about 756 lb. net.

Neither the Indian nor the United Kingdom trade returns distinguish between the different classes of raw goat-skins exported or imported; but the United States trade returns distinguish between "dry" and "green or pickled" skins. In 1913–14 the number of dry goat-skins imported into the United States from India was over six times the number of pickled skins imported, and their value was over six times as great; but the weight of the dry skins was only three times that of the pickled skins. That is to say, a pickled skin weighs on an average twice as much as a dry skin, but only fetches the same price. The additional weight imparted to the skin by the pickling process does not add to the value of the skin, and must add to the transport charges. Already most of the raw goat-skins are exported in a dry state, and it would seem to be desirable that the dry method of preservation should be adopted still more widely, unless there is a definite demand for pickled skins for special purposes.

The Indian export trade in raw goat-skins is distributed among the provinces more evenly than the trade in raw hides, but the largest share of the skins, as of the hides, falls to Bengal in normal times. During the first three years of war the ports of Bombay and Sind improved their positions, relatively, at the expense of Bengal. The following table shows the chief percentage shares of the provinces of shipment for five years. (From Burma there are occasional exports of raw goat-skins, but only to the extent of a fraction of 1 per cent. of the total.)

Exports of Raw Goat-skins by Provinces

Provinces.	Percentages (weight).				
	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.
Bengal	45·6	45·3	41·7	40·0	27·7
Bombay	29·1	30·2	33·4	31·3	36·1
Sind	15·7	18·5	20·6	22·3	30·5
Madras	9·4	5·9	4·3	6·4	5·7
	99·8	99·9	100·0	100·0	100·0

The distribution of these exports overseas, as given in the Indian trade returns, is shown in the following table:

Exports of Raw Goat-skins: Distribution

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.
Total quantity *cwt.*	520,954	453,356	382,060	399,951	521,808
,, value	£2,278,616	2,085,132	1,561,018	1,836,543	4,275,888
	Cwt.	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
To British Countries					
United Kingdom	56,287 *10·8*	40,259 *8·9*	39,305 *10·3*	33,424 *8·4*	40,559 *7·8*
Others[1]	6,885	3,044	3,023	4,943	6,903
Total	63,172 *12 1*	43,303 *9·6*	42,328 *11·1*	38,367 *9·6*	47,462 *9·1*
To Allied Countries					
United States	381,266 *73·2*	342,452 *75·5*	300,676 *78·7*	353,997 *88·5*	452,151 *86·7*
France	35,659 *6·8*	22,717 *5·0*	8,667 *2·3*	7,573 *1·9*	21,893 *4·2*
Others[2]	5,668	8,953	9,764	14	302
Total	422,593 *81·1*	374,122 *82·5*	319,107 *83 5*	361,584 *90·4*	474,346 *90·9*
To Enemy Countries:					
Germany	12,504 *2·4*	11,118 *2·5*	7,003 *1·8*	—	—
Austria-Hungary	1,295	1,262	56	—	—
Total	13,799 *2·7*	12,380 *2·7*	7,059 *1·8*	—	—
To Neutral Countries					
Holland	21,390 *4·1*	23,551 *5·2*	13,547 *3·5*	—	—
Others	—	—	19	—	—
Total	21,390 *4·1*	23,551 *5 2*	13,566 *3 6*	—	—

[1] *Chiefly Australia.*
[2] *Chiefly Belgium, up to and including* 1914–15.

Three-fourths of the exports of raw goat-skins from India before the war were taken by the United States, whose predominant interests in this trade are attributed to American specialisation in the manufacture of glacé kid. Not only is the total production in the United States many times the production in the United Kingdom, but individual American firms turn out glacé kid in quantities far in excess of the output of any British firm. A few years ago this branch of American industry was suffering from over-production, but it enjoyed a revival of prosperity in the early stages of the war. In 1916–17 the exports of raw goat-skins from India to the United States formed nearly 87 per cent. of the total, and the actual quantity was greater than before the war. India's next best customers used to be the United Kingdom, France, Holland and Germany. For some years before the war these four countries, with the United States, took over 97 per cent. of the total. The proportion taken by Germany, though small, was increasing (from 1·5 per cent. in 1910–11 to 2·5 per cent. in 1913–14), and so was the proportion taken by Holland (from 3·4 per cent. in 1910–11 to 5·2 per cent. in 1913–14). On the other hand the proportion taken by France was only 5 per cent. in 1913–14 against 7·4 per cent. in 1910–11. Among countries not listed separately in the preceding table, Australia took the bulk of the exports to British countries other than that of the United Kingdom. Before the war the trade was declining; exports to Australia dropped from 9,386 cwt. in 1910–11 to 1,964 cwt. in 1913–14; but both in 1914–15 and in 1915–16 there was some recovery. Practically all the exports to Allied countries other than the United States and France went to Belgium, and the rapid increase of trade in this direction before the war is apparent from the table.

Though a long way behind the United States, the United Kingdom took the next largest share of the exports of raw goat-skins from India. There is, however, a large re-export trade in these skins from the United Kingdom. According to the United Kingdom trade returns, only about one-fifth of the undressed goat-skins imported from India were retained before the war; in

1915 the proportion rose to between one-third and one-fourth, but in 1916 it dropped to less than one-eleventh. The figures have already been given in conjunction with other returns of the United Kingdom trade in Indian hides and skins (see p. 79), but it will be convenient to repeat them here.

United Kingdom Imports of Raw Indian Goat-skins

	1912.	1913	1914.	1915.	1916.
Number imported .	5,499,192	5,933,071	3,648,301	4,988,277	5,926,264
Number retained .	1,217,481	1,149,836	710,055	1,437,680	511,662

With these figures may be contrasted the following, taken from the Indian trade returns :

Number of Raw Goat-skins exported from India to the United Kingdom

1911–12.	1912–13.	1913–14.	1914–15.	1915–16.
1,406,162	2,109,517	1,412,071	1,275,858	1,289,301

Exact comparison of the Indian export returns with the United Kingdom import returns is impossible, not only because of the difference in the trade years for which statistics are given (calendar years in the case of the United Kingdom, and years ending March 31st in the case of India), but because of the time allowance necessary for transport. In general, however, it will be seen that the Indian export returns are intermediate between the United Kingdom gross and net import returns, though much nearer the net than the gross returns. The two periods of five years covered by the tables differ at each end by nine months, less the time allowance for transport. During the one period (1912–16), according to the United Kingdom trade returns, the gross imports of undressed goat-skins from India amounted to nearly 26,000,000 skins, and the net imports to just over 5,000,000 skins; while in the other period (1911–12 to 1915–16), according to the Indian trade returns, the exports of raw goat-skins to the United Kingdom amounted to 7,500,000 skins. The Indian trade returns aim at giving as nearly as possible the exports to countries of final destination; and in the case of the trade in raw goat-skins with the United Kingdom it would appear that the Indian returns

have gone a long way in this direction, but that some further reduction is still necessary.

Incidentally it may be calculated from the Indian trade returns, in regard to the exports of raw goat-skins to the United Kingdom, that their percentage of the whole by weight is greater than their percentage by number; in other words, the skins exported to the United Kingdom are heavier than the average. But the outstanding fact, clearly revealed by the United Kingdom returns, is that the British trade in raw Indian goat-skins is largely a merchant trade: the skins are imported not for the use of British industry, but for sale to foreign buyers. The returns do not show the destinations of the re-exports of Indian skins, considered separately; but the distribution of the total re-exports of undressed goat-skins from the United Kingdom show that the Indian skins have been going chiefly to the United States. Normally between one-third and one-half of the gross imports of undressed goat-skins into the United Kingdom come from India (British countries as a whole supply about four-fifths of the total). Of these total imports from all sources about two-thirds (including four-fifths of the Indian skins) are re-exported. During the four years ending 1914 between 75 and 85 per cent. of these re-exports were consigned to the United States; in 1915 the percentage consigned to that country was 96, and in 1916 it was nearly 90. Before the war the next largest share of the re-exports of undressed goat-skins from the United Kingdom was taken by Germany, whose purchases were rapidly increasing—in 1911, 598,245 skins (nearly 8 per cent. of the total); in 1912, 930,291 skins (nearly 11 per cent.); in 1913, 1,121,994 skins (13 per cent.). During the war the largest share of the re-exports of undressed goat-skins from the United Kingdom, next to that of the United States, has been taken by France (in 1916, 847,230 skins, forming nearly 10 per cent. of the total).

While thus re-exporting to the United States more than half the undressed goat-skins shipped to this country, the United Kingdom takes from the United States large quantities of glacé kid, valued in each of the three years

1913–15 at about one and a half millions sterling, and in 1916 at two and a half millions. Thus there exists a state of affairs in which the raw material of a large and valuable industry is brought into this country, and then sent across the Atlantic for manufacture into an article of which large quantities cross the Atlantic in the reverse direction for sale in this country.

Tanned Goat-skins.—Analysis of the returns of the trade in tanned Indian goat-skins shows that that trade also, so far as the United Kingdom is concerned, is largely a merchant trade. During the last six years for which statistics are available, the total exports of tanned goat-skins from India were:

Exports of Tanned Goat-skins from India

Year.	Quantity.		Value.	Average weight.	Average value per lb.
	Number.	Weight. Cwt.	£	lb.	d.
1912–13 .	6,996,694	61,741	871,905	0·99	30·3
1913–14 .	8,575,249	74,126	1,073,767	0·97	31·0
1914–15 .	7,407,944	61,288	882,965	0·93	30·9
1915–16 .	8,402,764	70,773	986,999	0·94	29·9
1916–17 .	10,416,825	83,861	1,697,796	0·90	43·4
1917–18 .	—	15,303	468,734	—	65·6

In percentages of the exports in 1913–14 the exports of tanned goat-skins in the next four years were: in 1914–15, weight 83, value 82; in 1915–16, weight 95, value 92; in 1916–17, weight 113, value 158; in 1917–18, weight 21, value 44. The abnormal decline in the exports in 1917–18 and the great advance in their average value per lb. must both be considered in the light of government restrictions on industry and trade, including, it will be remembered, the prohibition of the tanning of skins in Madras and Bombay except by special permission. Unlike the Indian hides (both cow-hides and buffalo-hides), which gain comparatively little in export value per lb. by tanning, the average export value of tanned goat-skins per lb. is normally more than three times that of the raw skins (about 30*d.* per lb. tanned against 9*d.* to 10*d.* per lb. raw). This is true of each of the first four years in the last table. In 1916–17, when the prices of both raw and tanned goat-skins rose abnormally, the

relation of the tanned to the raw skins in respect of average export value was about 5 : 2 (43·4*d.* per lb. against 17·6*d.* per lb.; and in 1917–18, when the average price of tanned skins continued to rise sharply, while that of raw skins declined a little, the proportion was as much as 4 : 1 (65·6*d.* per lb. against 15·9*d.* per lb.). On the other hand the big difference between the average weights of the raw and the tanned skins is noteworthy—the tanned skins averaging just under 1 lb. against about 2½ lb. in the case of the raw skins. The difference would seem to be largely due to the proportion of the raw skins which are exported in the "green" or "pickled" state. Those imported into the United States in this condition have an average weight of between 3 lb. and 4 lb., whereas the "dry" skins imported into the States average only from 1½ lb. to 1¾ lb. If the average value per skin and not the average value per lb. be taken as the standard of comparison, the difference between the values of the raw and the tanned product is not nearly so great. Thus in 1913–14 the average value per skin of the raw goat-skins exported was 25·4*d.* and of the tanned skins 30·1*d.*

From three-fourths to four-fifths of the exports of tanned goat-skins from India are despatched from Madras, and most of the remainder from Bombay, though from 2 to 4 per cent. of the total find an outlet through Sind. The skins for the Madras trade are drawn from Mysore as well as from the Presidency. The port of Madras has a practical monopoly of the trade. The tanned skins, like the raw, are available all the year round. For export they are pressed, wrapped in gunnies, and roped, each bale weighing about 600 lb. net. They are described according to the locality from which they come, *e.g.* Trichies, Coimbatores, Dindiguls, Coasts; also, in some cases, according to the quality, as Prime City and Medium City.

The distribution overseas of the total exports of tanned goat-skins from India, both before and during the war, as given in the Indian trade returns, is shown in the following table (the italicised figures are percentages):

Exports of Tanned Goat-skins from India: Distribution

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.
Total quantity *cwt.*	61,741	74,126	61,288	70,773	83,861
,, value .	£871,905	1,073,767	882,265	986,999	1,697,796
	Cwt	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
To United Kingdom	56,644 *91·7*	66,446 *89·6*	53,404 *87 1*	44,849 *63·4*	53,027 *63 2*
,, United States .	2,641 *4·3*	5,846 *7·9*	6,913 *11·3*	25,682 *36·3*	30,073 *35·9*
,, Germany . .	2,369 *3·8*	1,663 *2·2*	670 *1 1*	—	—
,, Other countries	87 *0·2*	171 *0·3*	301 *0·5*	242 *0·3*	757 *0·9*

Before the war the tanned goat-skins exported from India, like the tanned hides, were consigned chiefly to the United Kingdom. Indeed the trade was almost entirely in the hands of United Kingdom buyers. They were taking nine-tenths of the total; and the United States and Germany were the only other countries taking more than trifling quantities. On the outbreak of war the exports to Germany ceased; at first there was little development in the direct trade with the United States, and in 1914–15 the United Kingdom still took 87 per cent. of the total; but both in 1915–16 and in 1916–17 the exports of tanned goat-skins from India to the United Kingdom declined to 63 per cent. of the total, while those to the United States increased to 36 per cent. The loss to the industry, as distinct from the trade, of the United Kingdom, was not so great as might appear from these figures. On the contrary, the industrial supply of Indian tanned goat-skins in the United Kingdom during the war, up to and including 1916, would seem to have been larger than before the war. The United Kingdom statistics do not show what proportion of the imports of tanned goat-skins from India alone are re-exported, but it may be inferred from the returns of the United Kingdom trade in tanned goat-skins from all overseas sources that ordinarily by far the greater part of the Indian skins imported are sent out of the country again. The following table gives the returns for the five years period beginning 1913—the first year for which such returns were published (the italicised figures are percentages of the total imports):

United Kingdom Trade in Rough Tanned Goat-skins

Imports from	1913. Cwt.	1914 Cwt.	1915. Cwt.	1916. Cwt.	1917. Cwt.
British India	62,935	60,302	56,501	78,781	33,977
(per cent.)	*81*	*82*	*84*	*93*	*93*
British West Africa	12,588	9,959	8,715	5,726	2,071
Other countries	1,764	2,887	1,998	251	390
Total Imports	77,287	73,148	67,214	84,758	36,438
Re-exports	65,342	57,544	39,434	70,344	27,015
(per cent.)	*85*	*79*	*59*	*83*	*74*
Net Imports	11,945	15,604	27,780	14,414	9,423

Contrary to what has been noticed in connection with the trade in raw goat-skins, the exports of tanned goat-skins from India to the United Kingdom, as given in the Indian returns (see p. 115), are in much closer agreement with the gross than with the net imports of tanned goat-skins into the United Kingdom from India, as given in the United Kingdom returns. According to the latter returns, over 80 per cent. of the total imports of such skins before the war came from India, and the proportion increased to 93 per cent. in 1916. Of these total imports, however, three-fourths or more were re-exported in each of the last five years except 1915, when the proportion fell to three-fifths. The quantity retained in the year before the war was 11,945 cwt., and this was exceeded in each of the next three years; but in 1917, when the total imports were over 50 per cent. below the average for the previous four years, the quantity retained fell to 9,573 cwt. The largest share of the re-exports in 1913 went to Germany (42 per cent.), but the United States (33 per cent.) was not far behind, and during the war most of the re-exports have gone to the latter country (80 per cent. in 1915; 81 per cent. in 1916). The chief uses to which these Indian tanned goat-skins are put are bookbinding and the manufacture of fancy leather articles.

Sheep-skins

Like other tropical breeds, the sheep of Peninsular India are not generally distinguished for either their mutton or their wool. The fleece is often coloured (red

or brown or grey) and the wool tends to be short and coarse. The ewe rarely produces more than one lamb at a birth, but may bear young twice a year. Here and there attempts have been made to improve the breed, and the results obtained by crossing Deccani ewes with Dumba rams—the fat-tailed sheep of Afghanistan—are described as very satisfactory, the half-breeds yielding good mutton and long fine wool, like that of the pure Dumba. In some of the cooler parts of India farther north, where the wool-producing qualities of the sheep reach a higher general level, good results have been obtained by the introduction of merinos from Australia, and the half and three-quarter bred rams are in great demand in the Punjab and the United Provinces. So far, however, grading-up experiments have been on a comparatively small scale, and of a tentative character; the great mass of the flocks are still untouched. Apart from breed-improvement measures, it is claimed that much good would result from the more general adoption of the practice of dipping. Some years ago (*Agric. Journ. India*, 1912, 7, 55), Major F. S. H. Baldrey, Superintendent of the Civil Veterinary Department in the Central Provinces, estimated that the average weight of the wool clip would be increased from 3 lb. to 4 lb. per sheep, and the value from *6d.* to *7d.* per lb. if the animals were not tormented by skin parasites. Even as things are, the annual exports of raw wool from India before the war amounted to about 50,000,000 lb., with an export value of about £1,750,000 sterling.

Raw Sheep-skins.—The measures advocated for improving the quality of the sheep as meat and wool producers are usually put forward without regard to the value of the skins. The skins are a by-product, with which, as in the case of other hides and skins, only Mohammedans and low-caste Hindus will have anything to do. Moreover, sheep-skins are a much smaller factor than goat-skins in the foreign trade of India. This is especially true of the raw sheep-skins, which occupy quite a minor place in the Indian trade in hides and skins. The exports of raw sheep-skins during the last five years for which returns are available are shown in the following table, together

with the average weight of the skins and their average export value per lb. in each year :

Exports of Raw Sheep-skins from India

Year	Quantity.		Value.	Average weight	Average value per lb.
	Number.	Weight.			
		Cwt	£	lb.	d
1912–13 .	2,297,499	31,668	155,285	1·5	10·5
1913–14 .	2,373,122	33,067	173,999	1·6	11·3
1914–15 .	1,956,986	26,295	132,355	1·5	10·8
1915–16 .	2,245,075	32,517	154,438	1·6	10·2
1916–17 .	2,918,458	45,134	323,968	1·7	15·4

On average, raw sheep-skins are a good deal lighter than goat-skins, but before the war they were worth (export value) from 1*d.* to 1½*d.* per lb. more. Alike in number, total weight, and total value, the exports of raw sheep-skins were increasing before the war. The increase was checked when war broke out, and in 1914–15 the trade declined considerably; but it largely recovered in the following year, while in 1916–17 the returns were far greater than in 1913–14. In percentages of the exports in 1913–14, the exports in the three following years were: in 1914–15, weight 80, value 76; in 1915–16, weight 98, value 89; in 1916–17, weight 136, value 186. The figures for 1916–17 were not reached in the following year. The available Indian trade returns for 1917–18, under the head of Raw Skins, give particulars only of the goat-skins exported; but the exports of "Other Raw Skins" (which in previous years consisted almost entirely of sheep-skins) amounted to 36,994 cwt. valued at £249,997.

The chief outlet for raw sheep-skins from India is Karachi. In 1912–13, 79 per cent. of the exports of this description were despatched through the ports of Sind, and in 1913–14 the proportion rose to 90 per cent. The rest were divided almost entirely between Bengal and Bombay ports. After the outbreak of war, the share of the trade enjoyed by Sind ports declined, but in 1916-17 nearly 75 per cent. of the exports of raw sheep-skins were still despatched from Sind, while 20 per cent. were despatched from Bombay ports and 5 per cent. from Bengal.

The destinations of the exports, according to the

Indian trade returns, were as follows (percentages in italics):

Distribution of Raw Sheep-skins exported from India

	1912–13.	1913–14.	1914–15.	1915–16.	1916–17.
Total quantity *cwt.*	31,668	33,067	26,295	32,517	45,314
„ value .	£155,285	173,999	132,355	154,438	324,968
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
To British Countries:					
United Kingdom	1,081	1,599	326	340	60
	3·4	*4·8*	*1·2*	*1·0*	*0·1*
Others . .	46	340	143	614	622
Total . .	1,127	1,939	469	954	682
	3·6	*5·9*	*1·8*	*2·9*	*1·5*
To Allied Countries:					
United States .	28,986	28,818	24,682	31,404	43,884
	91·5	*87·2*	*93·9*	*96·6*	*96·8*
Others . .	357	220	156	159	748
Total . .	29,343	29,038	24,838	31,563	44,632
	92·7	*87·8*	*94·5*	*97·1*	*98·5*
To Enemy Countries[1]	740	1,799	898	—	—
	2·3	*5·4*	*3·4*		
To Neutral Countries[2]	458	291	90	—	—
	1·4	*0·9*	*0·3*		

[1] *Almost exclusively Germany.* [2] *Almost exclusively Holland.*

The controlling factor in this trade has been the United States; before the war about nine-tenths of the exports of raw sheep-skins from India were consigned there. The exports to the United Kingdom are normally small in themselves and small in comparison with the imports of such skins into the United Kingdom from other sources. In the Indian trade returns no distinction is made between the different classes of raw sheep-skins which are exported; but the *Annual Statement of the Trade of the United Kingdom* gives separate returns for woolled skins—that is, skins from which the wool has not been removed—and pickled skins. As the former are reckoned by weight and the latter by number, direct comparison of quantities is impossible; but the value of the United Kingdom imports of woolled skins is normally about three times that of the pickled skins. Between one-third and one-half of the woolled skins are re-exported normally, and a much larger proportion of the pickled

skins. The following table gives the figures for five years:

United Kingdom Trade in Raw Sheep-skins (Foreign and Colonial Merchandise)

A.—Woolled

Imports from	1912. lb.	1913. lb.	1914. lb.	1915. lb.	1916. lb.
British India	171,201	641,649	364,479	608,092	1,156,550
Other countries[1]	77,840,000	81,620,595	71,017,464	86,810,405	51,216,225
Total Imports	78,011,201	82,262,244	71,381,943	87,418,497	52,372,775
Re-exports	36,680,432	34,990,043	23,834,070	26,747,186	15,378,041
Net Imports	41,330,769	47,272,201	47,547,873	60,671,311	36,994,734

B.—Pickled

Imports from	1912. Number.	1913. Number.	1914. Number.	1915. Number.	1916. Number.
British India	34,275	65,088	80,598	96,006	70,150
Other countries[2]	8,350,561	7,468,710	6,344,310	8,834,097	4,785,923
Total Imports	8,384,836	7,533,798	6,424,908	8,930,103	4,856,073
Re-exports	6,122,934	6,716,190	5,814,179	7,774,649	5,009,263
Net Imports	2,261,902	817,608	610,729	1,155,454	*

* Excess of re-exports over imports, 153,190 skins.

[1] *Chiefly Australia and South Africa, with New Zealand third, but a long way behind.*

[2] *Chiefly New Zealand (normally three-fourths of the total).*

Though India plays so small a part in these returns, they are not without instruction in the present study of the Indian trade in hides and skins. They show clearly that under pre-war conditions there was no great industrial demand in the United Kingdom for pickled sheep-skins, and that though considerable quantities of woolled sheep-skins were absorbed, the demand was more than met from other countries than India, chiefly British. In the re-export trade from the United Kingdom, the best customer for the woolled skins before the war was France (between 40 and 50 per cent.), followed by the United States (between 25 and 35 per cent.). Of the pickled skins re-exported, over 85 per cent. went to the United States.

Tanned Sheep-skins.—As previously indicated, one distinguishing characteristic of the Indian trade in sheep-skins, as compared with the trade in hides and goat-skins, is that the exports of tanned sheep-skins exceed the

exports of raw sheep-skins in both quantity and value. The number, weight, and value of the tanned sheep-skins exported, with the average weight per skin and the average price per lb., are given in the following table for the last six years :

Exports of Tanned Sheep-skins from India

Year.	Quantity.		Value.	Average weight.	Average value per lb.
	Number.	Weight. Cwts.	£	lb.	d.
1912–13 .	9,701,682	60,355	776,893	0·70	27·6
1913–14 .	8,119,205	49,652	639,000	0·68	27·6
1914–15 .	7,512,804	45,978	588,965	0·69	27·4
1915–16 .	8,219,040	49,345	658,478	0·67	28·6
1916–17 .	11,172,365	66,254	1,400,686	0 66	45·3
1917–18 .	—	15,895	458,630	—	61·8

In 1912–13 the tanned sheep-skins exported were between four and five times as numerous as the raw skins, nearly twice as weighty, and five times as valuable. In 1913–14, the tanned skins were about 50 per cent. greater than the raw skins by weight. These comparisons relate to totals. The average weight of the tanned skins is less than half that of the raw skins, while the average price per lb. (export value) is normally between two and three times that of the raw skins. As in the case of goat-skins, the values of the raw and tanned sheep-skins are much more nearly equal *per skin*. Indeed, tanning adds very little to the value of the sheep-skins normally. Thus in 1913–14, while the average value of the raw sheep-skins exported was 17·6*d*. per skin, that of the tanned sheep-skins was only 18·9*d*. per skin. Neither in 1914–15 nor in 1915–16 did the total exports of tanned sheep-skins show any very striking variation from the total in the latest pre-war year, 1913–14; but in 1916–17 the exports were greater in weight than they had been for some years before the war, and with a big increase in prices the total value exceeded £1,400,000. The sudden drop in 1917–18 is explained by the Government restrictions on the tanning and export of skins. In percentages of the exports in 1913–14 the exports in the four following years were: in 1914-15, weight 93, value 92; in 1915–16, weight 99, value 103; in

1916–17, weight 133, value 219 ; in 1917–18, weight 32, value 72.

Usually between 80 and 90 per cent. of the exports of tanned sheep-skins are despatched from the Madras Presidency (78 per cent. in 1916–17), and most of the remainder from Bombay. The Madras *Handbook of Commercial Information*, commenting on the provincial trade in sheep-skins, says that the raw skins are available all the year round, and the supply would be large if the demand existed ; but as a rule it is found to pay better to tan the skins. Tanned sheep-skins are important chiefly in the Ceded Districts, Mysore and Coimbatore. Of the provincial exports, 94 per cent. are despatched from the port of Madras, and 6 per cent. from Tuticorin. They are packed in pressed bales of from 500 lb. to 600 lb. net, wrapped in gunnies and roped.

The destinations of the total exports from India, as given in the Indian trade returns, are shown in the following table (percentages in italics) :

Distribution of the Exports of Tanned Sheep-skins from India

	1912–13.	1913–14.	1914–15	1915–16.	1916–17.
Total quantity *cwt*	60,355	49,652	45,978	49,345	66,254
„ value .	£776,893	639,000	588,965	658,478	1,400,686
	Cwt.	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
To British Countries					
United Kingdom	34,944 *57·9*	29,202 *58·8*	29,180 *63·5*	31,553 *63·9*	41,623 *62·8*
Straits Settlements	2,469	1,718	1,766	1,771	1,738
Other countries	312	511	256	387	119
Total . .	37,725 *62·5*	31,431 *63·3*	31,202 *67·9*	33,711 *68·3*	43,608 *65·8*
To Allied Countries					
United States .	13,382 *22·2*	10,365 *20·9*	6,209 *13·5*	9,770 *19·8*	16,066 *24·2*
Japan . .	9,129 *15·1*	7,459 *15·0*	8,424 *18·3*	5,803 *11·8*	6,428 *9·7*
Other Countries	79	280	91	41	152
Total . .	22,590 *37·4*	18,104 *36·5*	14,724 *32·0*	15,614 *31·6*	22,646 *34·2*
To Enemy Countries	11	117	48	—	—
To Neutral Countries	29	—	4	20	—

Practically all the tanned sheep-skins exported from India were despatched, even before the war, either to other British countries or to countries now among the

Allies. The proportion consigned to the United Kingdom was not so large as in the case of tanned kips, tanned buffalo-hides, and tanned goat-skins; none the less it amounted to three-fifths of the total. The remainder went chiefly to the United States and Japan. Up to and including 1916-17, the distribution underwent little change during the war.

Undressed (rough tanned) sheep-skins figured in the United Kingdom trade returns as a separate entry for the first time in 1913. In that year India contributed 44 per cent. of the total imports for such skins into the United Kingdom; but 56 per cent. of the total were re-exported. During the war a much larger proportion of the imports has been retained. The following are the figures for 1913 and subsequent years:

United Kingdom Trade in Rough Tanned Sheep-skins (Foreign and Colonial Merchandise)

Imports from	1913. Cwt.	1914 Cwt.	1915. Cwt.	1916. Cwt.	1917. Cwt.
British India	39,253	28,764	32,946	45,186	—
Other countries	49,393	45,888	57,370	26,978	—
Total Imports	88,646	74,652	90,316	72,164	47,945
Re-exports	49,938	29,087	9,994	35,501	14,158
Net Imports	38,708	45,565	80,322	36,663	33,787

Of the re-exports in 1913, Germany took 18,669 cwt. (37 per cent.), Austria-Hungary 9,569 cwt. (19 per cent.), and the United States 14,138 cwts. (28 per cent.); together these three countries took 84 per cent. of the total, and the remainder went almost entirely to the Netherlands and other foreign countries. During the war the re-exports have gone almost entirely to the United States.

East India tanned sheep-skins are suitable not only for the manufacture of fancy articles but for roller leather, which is used largely in cotton-spinning machinery for covering small rollers over which the cotton-thread is drawn. They are also suitable for currying purposes, for light-boot upper-work.